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ANNUAL REPORT  
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1917 to 1921.

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\*Roberts, Capt. William, Bella Vista, Perranporth.  
Roberts, Capt. James, Perranporth.  
\*Rogers, Capt. Arthur, R.N.R., The Crossways, Falmouth.  
Rogers, Mrs. Arthur, The Crossways, Falmouth.  
Rogers, John, Esmond, Falmouth.  
Rogers, Mrs. J., Esmond, Falmouth.  
Rogers, Mrs. Reginald N., Carwinion, Falmouth.  
Rogers, Mrs. William, Woodlane, Falmouth.  
Rogers, Mrs. R. B., Hexworthy, Launceston.  
Rogers, Mrs. Wilfred, Barnes Cottage, Mawnan, Falmouth.  
Rogers, Walter, M.A., Hexworthy, Launceston.  
Rose, Sir Thomas Kirke, D.Sc., Royal Mint, London, E. 1.  
Rowe, J. Hambley, M.B., 88, Horton Grange Road, Bradford.  
Rowe, James, Pendarves Road, Camborne.  
Rowe, Alfred, Commercial Street, Camborne.  
Rows, R. G., The Willows, Helston.  
\*Sharpe, W. W. J., 17, Florence Terrace, Falmouth.  
Sharpe, Mrs. W. W. J., 17, Florence Terrace, Falmouth.  
Shepherd, Lieut. J. C., Albany Road, Redruth.  
\*Shilson, D. H., Trewiddle, St. Austell.  
\*Smith, Sir George J., Trelliske, Truro.  
Stancourt, Fred, 24, Walbrook, London, E.C.  
Stephens, Capt. Wm. J., R.A.M.C., M.R.C.S., Hayne, Newquay.  
Stephens, Miss S. M., Ashfield, Falmouth.

- \*Stephens, J. Gilbert, The Cottage, Ashfield, Falmouth.  
 Stephens, Mrs. J. G., The Cottage, Ashfield, Falmouth.
- \*Stephens, F. J., F.G.S., East Cottage, Bude.  
 Steuart, Douglas S. S., B.Sc., F.R.Met.Soc., F.C.S., F.G.S., 90, Queen Street, London, E.C.
- Stewart, Capt. Mervyn J., 7, Stratton Terrace, Falmouth.  
 Stewart, Mrs. M. J., 7, Stratton Terrace, Falmouth.
- \*Stocker, Henry, St. Austell.  
 Strongman, F., 6, Trevethan Terrace, Falmouth.  
 Stutchbury, M. S., 12, Queen Anne's Gate, London, S.W.  
 Swithenbank, Mrs. J., Wickham Cottage, Falmouth.  
 Taylor, M. T., East Pool Mine, Carn Brea.
- \*Temby, J. H., Homefield, Camborne.
- \*Thomas, R. Arthur, Polstrong, Camborne.  
 Thomas, F. W., Birklands, 32, Westcliffe Road, Birkdale, Southport.  
 Thomas, C. V., Basset Road, Camborne.  
 Thomas, William, Stafford House, Claremont, Redruth.  
 Tilly, Alfred, Warleggan, Bodmin.  
 Tonkin, Mrs., Penwarne, Falmouth.  
 Treffrey, C. E., Place, Fowey.
- \*Trefusis, Lieut.-Col. the Hon. H. W. F., Porthgidden, Devoran.  
 Tregarthen, J. C., Rosmorran, Newquay.
- \*Trestail, Nicholas, A.M.I.C., Claremont Road, Redruth.  
 Truro, The Right Rev. the Lord Bishop of, Lis Escop, Truro.  
 Tuckett, Mrs. R. E., Glendurgan, near Falmouth.  
 Vallentin, Rupert, F.L.S., Carwinnion Vean, Mawnan.  
 Vallentin, Mrs. R., Carwinnion Vean, Mawnan.  
 Vivian, John, Basset Street, Camborne.  
 Ward, W. W., Bosloe, Mawnan.  
 Wethered, F. J., M.D., F.R.C.P., Peneacr, Melville Road, Falmouth.  
 Wickett, Tom, 11, Trewirgie Road, Redruth.
- \*Wickett, James, Clinton Road, Redruth.  
 Williams, S. B., Roskear, Camborne.
- \*Willmore, Arthur, 4, Florence Terrace, Falmouth.  
 Worth, R. K., Lemon Street, Truro.

#### LIFE MEMBERS.

- Charles Henry Fox, M.D., 35, Heriot Row, Edinburgh.  
 Thorpe, Sir T. E., C.B., Ph.D., F.R.S., Whinfield, Salecombe, Devon.  
 Frederic W. Fox, 39, Bunk Street, Ashford, Kent.

- \*Edward Kitto, F.R.Met.Soc., Pennance, Preston, Paignton.  
 H. S. Hill, M.J.I., 29, Staddon Terrace, North Road, Plymouth.  
 William Brooks.  
 R. H. Kirton, 22, Broughton Road, Handsworth, Birmingham.

### HONORARY MEMBERS.

- Sir R. T. Glazebrook, C.B., D.Sc., F.R.S., Bushy House, Teddington, Middlesex.  
 Sir William Napier Shaw, M.A., Sc.D., F.R.S., Metl. Office, Exhibition Road, South Kensington, London, S.W.  
 Sir Hugh Shakespear Barnes, K.C.S.I., K.C.V.O., 7, Cheyne Place, Chelsea, London, S.W.  
 apt. Ettrick W. Creak, C.B., R.N., F.R.S., 9, Hervey Road, Blackheath, S.E.  
 Charles Chree, D.Sc., LL.D., F.R.S., Kew Observatory, Richmond, Surrey.  
 Sir J. Norman Lockyer, K.C.B., LL.D., F.R.S., Solar Physics Observatory, South Kensington, London.  
 Sir Archibald Geikie, O.M., K.C.B., LL.D., D.Sc., F.R.S., Shepherds' Down, Haslemere, Surrey.  
 Hugh Robert Mill, D.Sc., 62, Camden Square, London, N.W.  
 The Lord Rayleigh, O.M., D.Sc., LL.D., F.R.S., Tereline Place, Witham, Essex.  
 Sir W. H. M. Christie, K.C.B., D.Sc., F.R.S., The Tower House, Down, Kent.  
 Professor H. H. Turner, M.A., D.Sc., F.R.S., University Observatory, Oxford.  
 Principal E. H. Griffith, M.A., D.Sc., F.R.S., University College, Cardiff.  
 Professor William Gowland, F.R.S., F.S.A., A.R.S.M., F.I.C., 13, Russell Road, Kensington, London, W.  
 John Scott Haldane, M.A., M.D., F.R.S., Lecturer on Physiology in the University of Oxford.  
 Sir Oliver Lodge, D.Sc., LL.D., F.R.S., Principal of Birmingham University.  
 Sir Thomas Holland, K.C.I.E., D.Sc., F.R.S., F.G.S., Director of the Geological Laboratory at the University of Manchester.  
 Sir Henry Alexander Miers, M.A., D.Sc., F.R.S., F.G.S., Cromwell Range, Fallowfield, Manchester.  
 W. J. Sollas, M.A., Sc.D., F.R.S., F.G.S., Professor of Geology in the University of Oxford.

Dr. Louis A. Bauer, Director of the Department of Terrestrial Magnetism, Carnegie Institute, Washington, U.S.A.

Sir Joseph Larmor, M.A., D.Sc., F.R.S., M.P., St. John's College, Cambridge.

Robert Simpson Woodward, Ph.D., LL.D., Sc.D., President of the Carnegie Institute, Washington, U.S.A.

\*Wilson Lloyd Fox, F.R.Met.Soc., Carmino, Falmouth.

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NOTE.—*The Secretary will be obliged if the Members will inform him of any errors or necessary alterations in these lists.*

## Annual General Meeting.

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THE eighty-fifth Annual General Meeting of the Royal Cornwall Polytechnic Society was held in the Library of the Polytechnic Hall, Falmouth, on Tuesday, February 12th, 1918, the President (Mr. H. Jenner) occupying the chair. There were also present: Colonel Faulkner Brown, Major Luard, Rev. F. D. Bruce, Mr. and Mrs. F. J. Bowles, Mr. and Mrs. J. Chellew, Messrs. T. F. G. Dexter, P. Y. Alexander, R. Barclay Fox, W. Ll. Fox, C. L. G. Fox, J. Badger, A. Pearce Jenkin, H. Fox, H. B. Carlyon, J. Rogers, C. Phillips, J. R. Phillips, A. Rogers, E. P. Kestin (Hon. Treasurer), and Mr. E. W. Newton (Secretary). Mrs. H. Jenner, Miss O. B. Fox, Miss I. Stephens, Mrs. M. Rogers, Mrs. W. W. J. Sharpe, Mrs. R. B. Chellew-Woolcock, Miss E. A. Martin, and Mrs. G. H. Fox.

The President read apologies for absence from the Lord Bishop of Truro and Miss Burrows, Sir Arthur Pendarves Vivian, Professor H. Louis, the Rev. Canon Burns, Capt. Creak, Messrs. J. Gilbert, E. Kitto, H. D. Acland, F.S.A., W. J. Stephens, H. Elkington, H. S. Hill, and W. H. Trewartha James.

Mr. Trewartha James wrote: "Please express to the President and Members my great regret at my inability to attend. I would gladly have said a few words about Tin and Tungsten Research, for there can be no doubt whatever that at this early and incomplete stage of the work we can definitely promise an improvement in recovery even by present

plant and methods, in addition to which we have now definitely ascertained as facts many matters about which hitherto there has been in Cornwall amongst experts great difference of opinion."

The Secretary then read the minutes of the last Annual Meeting, which were duly confirmed, and the Annual Report of the Council.

The President said that before the adoption of the Report of the Council was moved he would like to explain one small matter about the Tin and Tungsten Research. Quite recently the Research Board, which was mentioned in the Report as about to be organised, had been organised, and the old Research Committee had been kept on, and he (the President) had been asked to continue to be a member of it. He thought that membership ought to be attached to the Presidentship of the Polytechnic, and not to himself personally, and that he should go out when he ceased to be President. Although the Research Board only consisted of four or five members, it was a very strong one, and the Government was prepared to give £2500 each year for three years if a similar sum was collected locally or otherwise, so that the thing had got on to a really sound financial footing. A large sum had already been raised. The Duchy had given £500, several people had given £250.

The Secretary : "The whole of the money has now been raised."

The President : "That is good news." Continuing, the President said he was much obliged to the Society for their congratulations on his gaining the Henwood Gold Medal. He looked upon it as a very great honour, and he only wished he deserved it more. There happened not to be very severe competition that year, or perhaps he would not have got it.

Mr. F. J. Bowles, moving the adoption of the Report of the Council, said he did so with great pleasure, because he was confident that not only those present, but their members elsewhere and the public who read it in print would feel that it

was a record of good work done during the past year. When they thought of the engrossing struggle in which they had been engaged, it would not have been surprising if societies like theirs had fallen into obscurity or had suspended their operations, but he thought it spoke well for their coolness and level-headedness that throughout the country the various scientific societies had continued their work. The Polytechnic had kept itself alive, and was ready for fresh developments when the good time for which they were so anxiously waiting came round. A glance at the list of members showed how many of them had given up their services to the national cause, and they were glad it was so. The Society had readily parted with the services of their Secretary on national service, and were proud to have good testimony that those services had been most valuable. He had provided a good substitute in his young son, who had risen to the occasion in a remarkable manner. He remembered a great many years ago being invited with some other members of that Society to Dolcoath, more especially to see some new magnetic or electrical machinery that had been inaugurated. He remembered Captain Josiah Thomas then saying that one of his greatest difficulties was wolfram. He looked upon it as a nuisance, and it was firmly planted in his (the speaker's) mind that wolfram was something everybody would much rather be without. Wolfram turned into German became tungsten.<sup>1</sup> We did not care for it, but the Germans did, and now there is no scientific man who did not wish that we had paid more attention to it in the past. They would remember that the Polytechnic was one of the first, if not the first, as a Society to take in hand the raising of funds for Tin and Tungsten Research, and they raised a considerable sum of money. They were not allowed, on national grounds, to say the measure of success attained,

<sup>1</sup> *Tungsten* is not German but Swedish, and means "heavy stone." The equivalent German would probably be *Schwerstein*, but that word is not used.—EDITOR.



but they might say that it had been so far successful that the Government had taken the matter up in a very energetic manner indeed, and that which began with a local society had become a large national work, and they were pleased to recollect that as the earliest work of their Society was in connection with mines and miners, so their latest efforts had accomplished a good result in the same direction. They were all very pleased with the distinction conferred upon Mr. Jenner by giving him the Henwood Medal. Mr. Jenner belonged not only to the Polytechnic, but to the whole County, and a very much wider and larger circle outside. He anticipated that later on very much would come of the proposal for the Celtic Union, and as one who had been the greater part of his time in Cornwall, and the lesser in Wales, he (the speaker) could say that there was a wide field for profitable and interesting investigation, only there were more pressing matters to be disposed of first. It would not be expected that there would be very much doing in the way of exhibitions, excursions, summer meetings, or anything of that kind, but after all their summer meeting was an intensely enjoyable one, and that which they heard was well worth listening to and reading over again. In conclusion he thought they could say that all things considered the Society was in a very much better position than they might have expected, and it was therefore a very great pleasure to move the adoption of the report. (Applause.)

Mr. R. Barclay Fox, seconding, said the Polytechnic felt a good deal of pride that, in spite of—he would not say snubs, because that was not the word to use—but in spite of a good many difficulties, they had taken their share in initiating a work of research that had now become national. He must heartily endorse what had been said about the President, for he had done so much, not only for their Society but for the whole County generally. It would be a sad day for them when they lost him as a President. He (the speaker) did not feel so rosy about the financial position as some, but that was perhaps



due to the fact that being an optimist in most things he might be a pessimist in finance.

The Report was unanimously adopted.

Mr. Wilson Fox presented the report of the Observatory Committee, and proposed its adoption.

Mr. A. Pearse Jenkin, seconding, ask if it would be possible for the Society to extend its operations in a new direction. He believed it would be of very great service and utility and of great scientific value if they could have a sort of meteorological survey of the County. They were peculiarly and interestingly situated, and there were great differences of climate between different parts of the County. He was more particularly interested in rainfall, and that was perhaps the easiest observation to be tackled. All round the coast we had a small rainfall and inland we had a large rainfall, and it would be useful if a rainfall map could be prepared. If the Society took it up he thought that might quite well be accomplished. If the time was not quite opportune for entering upon such a scheme at the moment, useful preliminary work could be done by getting observers in parts of the County that were not at present covered. The position now was that all round the coast and in positions that were not lofty there were a fair number of stations from which a rainfall map could be constructed, but in the higher parts of the County, say over 500 feet, they were very badly represented. They wanted more observers in those lofty regions. A monthly rain gauge would be sufficient, and perhaps the clergy in the different parishes would assist. Falmouth was very much favoured in some ways as to climate, but the records there hardly gave any indication of the climate of the whole of the County. He thought the matter was one to which the Society might turn its attention with much profit and hope of success. (Applause.)

The President : The suggestion of Mr. Jenkin is a very interesting one, and I think we might form some plan of carry-

ing it out. I wish he would formulate something on paper for carrying it out.

The President proposed the election of the following Vice-Presidents: Sir Thomas Kirke Rose, Canon Burns, Professor H. Louis and Mr. Trewartha James. Sir Thomas Kirke Rose was Chairman of the Tin and Tungsten Research Committee, and Chemist and Assayist of the Royal Mint. Canon Burns everybody knew. He had been a regular attendant at their meetings and they would be glad of his services. Professor H. Louis was a well-known scientist and mineralogist. Mr. Trewartha James had probably done more work on the Tin and Tungsten Research than anyone. It was his paper that started the whole thing at their summer meeting in 1915, and he has since been acting as Director of Researches under the Committee. He thought they had chosen four very excellent Vice-Presidents.

Mr. Howard Fox seconded, and the motion was carried unanimously.

The Secretary, bringing forward the list of new members for election, said the Society was very much the poorer for the number of members who had died, and had it not been for the election of new members it would be only a matter of a short time before the activities of the Society would come to an end. He was glad to be able to propose a fine list of members who would be of great use to the Society in time to come. The names were: Mr. and Mrs. J. Chellew, Mrs. Frederick Basset, Dr. Wethered, Mr. T. F. G. Dexter, Mr. W. J. Battershill, Miss Burrows, Sir Thomas Kirke Rose, Mr. J. C. Tregarthen, Mr. P. Y. Alexander, Mr. and Mrs. J. Rogers, Mr. and Mrs. H. Bailey, Mr. E. G. Constantine, Mr. H. Collins, Mr. and Mrs. Stuchbury, Lieut.-Col. G. Rippon. Before the names were seconded, the Secretary said he would like to take that opportunity of thanking the Society and particularly Mr. Jenner for doing his work while he had been away. The Society had been generally

kind, but Mr. Jenner had been particularly kind, and he should never forget it.

Mr. J. C. Badger seconded, and the names enumerated were added to the list of members.

Mr. E. P. Kestin, proposing the adoption of the accounts, said they began the year with £85 4s. 6d. and ended with £90 15s. 5d. in hand. They had £750 in war stock and £17 8s. 1d. on deposit. He thought it was hardly worth while keeping so small a sum on deposit, and he suggested the amount should be merged in the general account. Mr. Fox had expressed some feeling of pessimism on the balance sheet. He did not think he need have done so. He (Mr. Kestin) thought it was in a very satisfactory condition, and he had pleasure in proposing its adoption.

Mr. Carlyon seconded. Carried unanimously.

Colonel Faulkner Brown proposed a vote of thanks to the Observatory Committee. He thought it was very satisfactory to learn that in spite of the War the records of the Observatory were still carried on. It was by persistent and accurate records that scientific work was carried on and progress made. They knew that variations in weather were primarily owing to the conflict between the cold of the poles and the evaporation and heat of the tropics. With regard to the local variations in this county he had in mind the meteorological condition of the hills of Jamaica. Cornwall is almost an island, and is probably subject to something of the same conditions as an island. In Jamaica he frequently observed that during the day the trade winds increased in force, and at the same time the sun was evaporating quantities of water. This raised volumes of moisture into the air, and the strong wind forced it up to the tops of the mountains, where the temperature, instead of being 70° or 80°, instantly became about 40°. The result was that towards evening the moisture was all condensed and fell in the form of rain on the other side of the island. The further from the centre the less rain fell, and at a

place called Apostles' Battery at the level of the sea on the other side there were only three inches of rain in the year. Cornwall is very much the same shape as Jamaica, only on a smaller scale, and he had often observed at Tremough that the climate was not the same as it was at Falmouth. When a strong westerly wind was prevailing he often noticed that a sort of mistral hung over Tremough, which did not exist at Falmouth, and when the wind is blowing the other way there was wet weather at Falmouth which did not exist at Tremough. He thought the suggestion that records should be made on the centre line of the County should be attended to.

The vote of thanks was seconded by Mr. C. Phillips and carried unanimously.

Mr. Wilson Fox said the sea-shells mentioned in the Report were of a kind that hardly any of them had seen before. When the storm came thousands of them were washed up round the coast, although they were almost unknown to residents.

The Rev. F. Bruce proposed a vote of thanks to the Finance Committee, Mr. and Mrs. G. H. Fox, for placing their garden room at the disposal of the Society for the summer meeting and to those who read papers at that meeting.

Colonel Faulkner Brown seconded. Carried unanimously.

Mr. Dexter proposed a vote of thanks to the Chairman, and spoke of the assistance he had received from Mr. Jenner in archæological matters. Mr. Jenner had at all times placed his great wealth of learning at his disposal, and only that afternoon had handed him a paper which was full of learning. It was a paper that it took a man fifty years to be able to write. They were exceedingly fortunate in having a man so learned and so genial and ready to help others as Mr. Jenner, and it was with very great pleasure that he proposed a hearty vote of thanks.

Mr. Wilson Fox, seconding, said good wine needed no

bush, but as one of the Executive Committee, he had personal experience of Mr. Jenner's worth. Carried unanimously.

The Chairman, returning thanks, said so many pretty things had been said to him that he was beginning his last year of office under remarkably nice auspices. They had been so kind to him, and really taken what he had to say as if it had been of some value. Perhaps it was ; perhaps it wasn't. He hoped it was. One of the pleasantest things he had ever known had been his Presidentship of the Society.

## Report of the Council for 1917.

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IN presenting the Report for 1917, your Council are glad to be able to state that in spite of the continuance of the War, the work of the Society has progressed as satisfactorily as has been possible without detracting in any way from greater national duties. Though, like all other societies of the sort, its operations have been necessarily hampered and restricted by the exigencies of the times, it has, nevertheless, done more than merely continue to exist, and, as will be seen later, the usefulness of its work from a national point of view has been fully recognised.

The Summer Meeting was held in the Garden Room at Wodehouse Place, Falmouth, on August 21st, when the following gardens were thrown open at 11 a.m. to the members and their friends: Carmino, Grove Hill, Marlborough, Rosehill and Wodehouse Place. The weather was all that could be desired, and the visitors thoroughly enjoyed the inspection of these interesting gardens.

Your thanks are again due to the respective owners for their kindness, and particularly to Mr. and Mrs. G. H. Fox for the use of their Garden Room.

The Meeting was opened at 2 p.m. by your President, Mr. Henry Jenner, who gave a very interesting Address on "The Dedications of Cornish Churches," which formed a fitting completion to his paper last year entitled, "The Irish Immigration into Cornwall in the Fifth and Sixth Centuries."

This was followed by a paper read by Mr. Ernest H. Davison on the "Perran Iron Lode," and also a paper on "Aerial Communication" by Mr. Patrick Y. Alexander.



These papers and the Address were much appreciated and freely discussed by the Meeting, and will be printed in this year's Annual Report.

Last year your Council reported that the movement initiated at the Summer Meeting of the Royal Cornwall Polytechnic Society in 1915 had resulted in the appointment of a "Tin and Tungsten Research Direction Committee" to direct the correlation and completion of researches and experiments on the existing methods of extraction and economic production of Tin and Tungsten, and to suggest new methods. It is not necessary to repeat what was said in last year's Report concerning the constitution of the Committee, the financial arrangements made with the Research Committee of the Privy Council, the work of the Committee, or the formation and work of the Cornish Technical Sub-Committee appointed by it. All this may be read in the Annual Report for 1916, which will soon be in the hands of the members. Since the last Report a good deal has been done. A detailed Report of the work of the Tin and Tungsten Research Direction Committee to September, 1917, for the information of the Councils of the Institution of Mining and Metallurgy and of the Royal Cornwall Polytechnic Society, was laid before your Executive Committee at its November meeting. This was forwarded by the Chairman of the Research Committee, Sir Thomas Rose, with a letter to your Secretary, in which he says, "I would also take this opportunity of expressing on behalf of my Committee our deep appreciation of the public-spirited action of your Society in connection with the research, which has alone made it possible for the work to be done, and is, if we may say so, in accordance with the highest traditions of the Society." The contents of this Report are confidential for the present, so that all that can be said about it now is that after giving an account of the formation and organisation of the Committee, and of the formation of the Cornish Technical Sub-Committee, it gives details under seven different heads of the directions in which in-

vestigations are being made, and of the progress up to date in the investigations. It also gives a statement of the financial position of the Committee.

On November 7th, 1917, a Conference of great importance was convened at the Constitutional Club, London, by Sir Lionel Phillips, Controller of the Department of Mineral Resources. Your President and Secretary were invited to this Conference, as were also a large number of representatives of Cornish mining and Mining Companies. The object was to devise some means of collecting funds for further investigations, especially from those financially interested in the success of the research. Your Secretary being in London was able to attend the Conference, and also had an opportunity before it of conversing with Sir Lionel Phillips on the subject of the work of the Royal Cornwall Polytechnic Society with regard to the Tin and Tungsten Research, and other matters connected with Cornish mining. The Conference was very successful. It was decided that the work of collection should be placed in the hands of the Cornish Chamber of Mines, a body which is in touch with all the principal mining companies and mine owners of the County, and that the funds collected, as well as an equal amount to be granted by Government, should be under the control of the Research Department of the Privy Council, who would probably appoint a new Direction Committee to deal with the very much extended scheme of research. A large proportion of the money required was actually promised by some of those present, Mr. John Gilbert, on behalf of Lord Clifden, making an especially liberal offer. It may be mentioned that Sir Lionel Phillips in his speech to the Conference did full justice to the share which your Society has had in the initiation of the scheme.

The Institution of Mining and Metallurgy at the request of the Tin and Tungsten Research Direction Committee printed a paper on "Slime Treatment on Cornish Frames, with particular reference to the effect of surface," by Professor S.



J. Truscott, a member of the Research Committee. This long and valuable practical paper, which discusses and gives the results of experiments on the effect of contour and material of surfaces on inclined tables or frames in the treatment of tin and tungsten slimes, was read and discussed at a meeting of the Institution of Mining and Metallurgy on November 15th. This is the first result of the Research to be made public. A "Report on the Operations at Giew Mine" by the Cornish Technical Sub-Committee, and a "Report No. 1 of the Tin and Tungsten Research Board of the Cornish Sub-Committee" will probably be printed before long. The Giew Mine experiments were undertaken with a view of obtaining more information than has been hitherto available as to the exact amount of wastage under present methods, and the results are of great value.

Altogether it will be seen that the progress of the movement originated under the auspices of the Royal Cornwall Polytechnic Society has been fully up to our expectations, and is likely to have very important results. Though the two societies, ours and the Institution of Mining and Metallurgy, who had hitherto been running the affair in partnership, are by no means intending to sever their connection with it, but will continue to give all the help they can, it has now got beyond their hands, and has been taken over, and that by no means half-heartedly, by Government, which seems to be prepared to spend money on it. This is eminently satisfactory, and as a Society we may fairly congratulate ourselves on having set going a project which is likely to have far-reaching effects, and will be of the greatest service to Cornwall.

In September, 1917, a Celtic Conference, organised by the National Union of Welsh Societies (Undeb Cenedlaethol y Cymdeithasau Cymraeg), was held at Birkenhead in connection with the Welsh National Eisteddfod. Delegates from Scotland, Ireland, Brittany and the Isle of Man, as well as from Wales, attended and read reports on the progress and

present condition of the Celtic languages, literatures and studies in their respective countries since the last Celtic Congress in 1907. Your President, who had been Vice-President for Cornwall of the Celtic Association, which had organised the former Congresses, was invited, but was unable to attend. He sent, however, a report at some length on the progress of Celtic studies in Cornwall in archaeology, philology, etc., since 1907, which will appear in the forthcoming Report of the Conference. It was decided that a Celtic Union should be formed, and that the Provisional Committee of this Union should consist of ten members each from Scotland, Ireland, Wales and Brittany, and five each from Cornwall and the Isle of Man, who should represent Celtic Societies in their respective countries. As there is no exclusively Celtic Society in Cornwall, as in the other Celtic countries, it was decided, at your President's suggestion, that the Cornish members should be nominated by the three societies, the Royal Institution of Cornwall, the Royal Cornwall Polytechnic Society, and the Penzance Natural History and Antiquarian Society, which included Cornish Celtic matters among their subjects, and that the first two should nominate two members each. The Executive Committee of your Society thereupon nominated Dr. J. Hambly Rowe and Mr. R. Morton Nance as their representatives, the Council of the Royal Institution having already nominated Mr. Henry Jenner and Mr. John Penderbury as theirs. The first meeting of the Celtic Union will take place sometime in next July, probably at Swansea. The Union is purely literary, linguistic, historical and archaeological in its objects, and has no connection with any sort of politics. Your Council are of opinion that it deserves the support of all Cornishmen who are proud of their Celtic past.

Your Council desires to take this opportunity of congratulating your President on the great honour lately paid him by the Royal Institution of Cornwall, of which for some years he has been the Honorary Secretary, and has carried out

the duties with exceptional ability. He has also contributed several valuable papers to their Transactions, and for one of these entitled, "The Earliest Existing Specimen of the Literature of the Cornish Language," which was discovered by him on the back of a charter in the British Museum, the Council of the Institution unanimously awarded the tenth Henwood Gold Medal to Mr. Jenner, and in presenting it at their Annual Meeting particular mention was made of his general work and researches in the Cornish language.

It is of course a truism to say that it is the bounden duty of everyone to do whatever he can for the country in its present need. This duty is particularly binding on those who are possessed of special qualifications of skill. The Council was therefore unanimously of opinion that no interests of the Society ought to stand in the way of allowing your Secretary, whose skill and knowledge in all matters relating to mechanical and mathematical instruments are of an unusually high order, to accept employment in a Government Inspection Department, where his services would be of great value to the country. It was arranged, therefore, that such of his duties as could not be done from a distance should be undertaken by others, and that he should be granted all necessary leave of absence without any pecuniary loss. This course has been amply justified by results. The Society, thanks especially to the generous help of your President, assisted by your Secretary's young son, Mr. J. V. Newton, has not suffered in any way, and the Council has reason to know that Mr. Newton's skill and industry have been very highly appreciated by his superior officers in the very important branch of war service to which he is attached.

The Observatory has continued to carry out its meteorological work during the year, and the tables will be published in your next Annual Report. The magnetographs previously in use, however, have been removed to Eskdalemuir on loan to the Meteorological Committee for one year upon

the recommendation of the Gassiot Committee of the Royal Society.

To the regret of your Council, the Society has lost several members by death during the year, including some of its most esteemed and valued supporters :—

January 4th. Charles Hawkins Hext, an esteemed member for many years, and one of your Vice-Presidents. He was High Sheriff of the County in 1915–16.

March 16th. F. M. Harris, although living out of the County, took a very kindly interest in the work of the Society and was a member of the Council.

May 27th. The Rev. Sir Vyell Donnithorne Vyvyan, ninth Baronet, was the representative of one of the oldest Cornish families. He became a member of the Society in 1880, immediately after his succession to the estates and title of his uncle, Sir Richard Rawlinson Vyvyan, who had been one of the first Vice-Presidents at the foundation of the Society in 1833. He was a Vice-President from 1881–83, and for many years took an active interest in the proceedings of the Society and was a frequent attendant at its meetings. He died at the age of ninety, and his loss will be keenly felt by all who knew him.

September 5th. Thurstan Collins Peter, F.S.A., President of the Royal Institution of Cornwall from 1912 to 1916, Editor of the Journal from 1900 and Henwood Gold Medallist in 1895, was a very distinguished member of the Society for many years. Born at Redruth in 1854, he was a son of John Luke Peter, Solicitor, of Redruth and St. Agnes, to whose business he eventually succeeded. As an expert on all matters connected with Poor Law he took a leading part in County affairs, and especially in helping those who most needed help. But it is still more as a Cornish antiquary that his reputation will last. Most of his work was done either in books of his own or for the Royal Institution of Cornwall, but he contributed to the Re-

ports of your Society three valuable papers : " Recent Archæological Discoveries at Carn Brea," in 1895 ; " Glasney and its Associations," in 1898 ; and " Cassiterides and Ictis. Where are they ? " in 1909. The first of these was a description of the very important excavations which he made at Carn Brea, another paper on which gained him the Henwood Gold Medal, and the second, also the result of personal investigations, was later developed into a " History of Glasney Collegiate Church." He was a Vice-President of the Society from 1901 to 1903. He will always be deeply regretted by all who knew him.

September 25th. William Henry Edgcumbe, fourth Earl of Mount Edgcumbe, P.C., G.C.V.O., D.C.L., was a very distinguished Cornishman. He was Lord Lieutenant of the County from 1877 ; first Chairman of the Cornwall County Council, Member of the Council of the Duchy since 1889, Keeper of the Privy Seal of the Duke of Cornwall since 1907, and Provincial Grand Master of the Freemasons of Cornwall since 1873. He was for nearly sixty years a member of the Royal Cornwall Polytechnic Society, of which he was one of the Trustees, and was for a long time a regular attendant at the Exhibitions. He was elected a Vice-President in 1875, and was President from 1883 to 1885. As President he took a very important part in the work of the Society, and his valuable and interesting addresses and kindly personality will long be remembered. He was President of the Royal Institution of Cornwall in 1882 and 1883, and during most of his long life, until age compelled him to retire from active service, he took a leading and very efficient part in Cornish public affairs.

October 10th. George T. Holloway, F.G.S., M.I.M.M., a very distinguished Scientist and Metallurgist. He was elected a Vice-President in 1900, and was also a member of the Council.

It will be your duty to elect your Vice-Presidents in the place of the late Charles Hext ; and of Messrs. Loftus<sup>1</sup> St. George Byne, Rev. Canon Fred. H. Hichens and Ralph B. Rogers, who retire by rotation. Your Council recommends the following members for election : Sir Thomas Kirke Rose, Professor Henry Louis, Rev. Canon Burns and Mr. W. H. Trewartha James.

The following members are recommended to be added to the Executive Committee : Rev. Canon Burns and Mr. John Badger.

The financial position is satisfactory. The Balance Sheet, which will be presented by the Hon. Treasurer, shows a credit balance slightly in excess to that of last year. A further £100 worth of War Stock has been purchased with money previously invested on Deposit Account.



# Hon. Treasurer in Account with the Royal Cornwall Polytechnic Society.

DR.1917.CR.

	£	s.	d.		£	s.	d.
To Balance in Capital and Counties Bank . . . . .	85	4	6	By Salaries . . . . .	120	0	0
„ Donation H.R.H. Duke of Cornwall . . . . .	5	0	0	„ Hall Keeper's Wages . . . . .	26	0	0
„ Members' Subscriptions for 1917 . . . . .	138	5	6	„ Lighting and Coal . . . . .	6	8	6
„ Arrears . . . . .	10	14	0	„ Travelling Expenses . . . . .	11	18	11
	148	19	6	„ Insurances, Rates and Taxes . . . . .	104	10	1
„ Rent of Hall . . . . .	310	15	0	„ Repairs and Renewals . . . . .	2	6	3
„ Rent of Committee Rooms . . . . .	18	2	6	„ Labour and Materials . . . . .	8	5	6
„ Rent of Club Room . . . . .	3	15	0	„ Printing and Stationery . . . . .	18	15	10
„ Acknowledgment Rent . . . . .	0	1	0	„ Printing Annual Report for 1916 . . . . .	50	9	6
„ Expenses incurred in connection with the Tin and Tungsten Research, refunded by Direction Committee . . . . .	67	7	2	„ „ Synopsis . . . . .	70	0	0
„ Report Sold . . . . .	3	7	3	„ Postages, Telegrams, and Railway Carriage . . . . .	14	9	3
„ Interest on War Stock . . . . .	29	8	1	„ Licence . . . . .	1	5	0
„ Interest on Deposit Account . . . . .	0	14	7	„ Acknowledgment Rent . . . . .	0	1	0
	30	2	8	„ Rent of Caretaker's Rooms . . . . .	13	0	0
„ Outstanding Cheques, Williams . . . . .	2	0	0	„ Refreshments . . . . .	4	10	0
„ Camborne Printing Company . . . . .	3	9	0	„ Library—Books and Papers . . . . .	13	16	10
	5	9	0	„ Reporting Annual Meeting . . . . .	1	6	0
				„ Returned Subscription . . . . .	1	0	0
				„ Winding Clock . . . . .	1	0	0
				„ Legal Expenses . . . . .	12	15	6
				„ Cheque Books . . . . .	0	10	0
				„ Donation to Tin and Tungsten Research Fund . . . . .	100	0	0
				„ Balance in Capital and Counties Bank . . . . .	95	15	5
	£678	3	7		£678	3	7

ASSETS—To Balance in Capital and Counties Bank . . . . .	95	15	5
„ Invested in War Stock . . . . .	626	6	3
„ „ on Deposit Account . . . . .	17	8	1
	£739	9	9

LIABILITIES—Nil

*Examined with vouchers and found correct.*

HAROLD B. CARLYON, W. W. J. SHARPE, E. P. KESTIN,	} Audit Committee.
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## Summer Meeting, 1917.

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THE Summer Meeting of the Royal Cornwall Polytechnic Society was held at the Garden Room, Wodehouse Place, Falmouth (by the kind invitation of Mr. and Mrs. G. H. Fox) on Tuesday, August 21st, 1917.

Among those present were the President (Mr. Henry Jenner) in the chair, Sir Arthur Pendarves Vivian, K.C.B., Lieut.-Colonel F. P. Nicholls, Major W. Luard, Capt. A. E. Gregor, Capt. A. Rogers, Commander J. D. Rogers, Lieut. Harris, R.A.M.C., the Rev. Canon J. S. Burns, the Rev. F. D. Bruce, the Rev. E. H. Enys, Messrs. H. D. Acland, F.S.A., P. Alexander, H. Bailey, F. J. Bowles, J. Couper, C. T. Club, W. B. Davison, W. Diplock, G. H. Fox, R. Barclay Fox, H. B. Fox, W. Ll. Fox, J. Gilbert, A. E. Jones, E. W. Newton (Secretary), J. B. Phillips, W. W. J. Sharpe, F. Stancourt, N. Trestrail, J. Wickett, Mrs. H. D. Acland, Mrs. H. Bailey, Mrs. F. C. Chegwidden, Mrs. Couper, Mrs. G. H. Fox, Mrs. W. Ll. Fox, Mrs. A. E. Gregor, Mrs. Hyde, Mrs. Hocking, Mrs. H. Jenner, Mrs. Jewell, Mrs. E. W. Newton, Mrs. Rogers, Mrs. W. W. J. Sharpe, Mrs. Mervyn Stewart, Mrs. A. E. Williams, Mrs. A. L. Weston, Miss Armstrong, Miss S. P. Armstrong, Miss B. Ferguson, Miss R. J. Fox, Miss O. B. Fox, Miss C. L. G. Fox, Miss Hillier, Miss J. Jewell, Miss H. E. D. Mills, Miss E. C. Mills, Miss L. Parker, and Miss Vivian.

The gardens of Wodehouse Place (Mr. and Mrs. G. H. Fox), Grove Hill (Mr. and Mrs. R. Barclay Fox), Rosehill (Mr. and Mrs. Howard Fox), Carmino (Mr. and Mrs. Wilson Ll. Fox) and Marlborough (Mr. and Mrs. Henderson Bull) were



thrown open to members, and the beautiful weather enabled them to enjoy them to the full.

The President gave an address, the subject of which was "The Dedications of Churches, with special reference to those of Cornwall." This appears in another part of the Report.

The Rev. Canon J. S. Burns said that he had been greatly interested in the subject, and astonished, and agreeably astonished, at what he had gathered from the address, and he approved of all that the President had said. He mentioned that according to the Breviary Lessons for the day of its dedication (5th August) the Church of Santa Maria Maggiore in Rome, which Mr. Jenner considered to be probably the first Church of St. Mary in that city, was called "major" to distinguish it from an already existing church of that dedication.<sup>1</sup> He also mentioned the tower in the Castle of Brest in Brittany, called after St. Azenora, the mother of St. Budoc, whom Mr. Jenner had identified with the patron saint of Zennor, and gave other instances of dedications from his personal observation in France and elsewhere.

Mr. Ernest H. Davison read a paper on "The Perran Iron Lode." This appears in another part of this Report.

Mr. John Gilbert said that St. Piran was the miners' saint, and he brought over the divine art of laziness from Ireland to Cornwall. He was not a mining engineer, but a collector of lords' dues, and he used to sit on the sands near the Perran iron lode and teach the Cornish miners how to play. On his saint's day he used to get the sleepest boy in the district and tell him to sleep as long as he could—the length of his sleep being the length of the miners' siesta during the remainder of the twelve months.

As to the Perran iron lode, he (Mr. Gilbert), after the speech by the Premier, in which he said that more iron ore was needed for shipbuilding, etc., wrote to him to say that

<sup>1</sup> For a discussion of this question raised by Canon Burns, see note on p. 50 of this Report.

although allusion had been made to the iron ores in the Midlands, no mention had been made of those in Cornwall. He pointed out that there were millions of tons of iron ore of mercantile quality in Cornwall which might be easily produced. On behalf of Viscount Clifden, the old iron mines in Cornwall were offered to the Government on their own terms at once—with or without the payment of a royalty. Mr. Peacock, on behalf of the Duchy, supported the movement so far as the Duchy mines were concerned. A formal acknowledgment was received, and on March 22nd the Steel Production Department asked for samples and analyses. These were forwarded, and in April a letter was received stating that the question would have careful consideration, and a further communication would be made on the matter. After waiting three weeks, he (Mr. Gilbert) went to see the gentlemen who wrote, and he said the matter was being dealt with by some department, or some watertight compartment or other. Nothing had been heard further, and he considered that this instance emphasised the need of co-ordination in Government departments. Instead of sending 800 men from the Cornwall clay district to work in the Midland iron ore quarries, on a lower grade ore than they had in Cornwall, and paying them a wage which was demoralising the miners who were left in the County and other people who had to work for their living, it would have been a great thing if the Government had taken into their heads and seriously contemplated working the vast quantities of iron ore in Cornwall. If they could have some assistance from a Government that was spending millions a day, the result in Cornwall would be very great indeed. Cornwall was the most highly mineralised zone in the British Isles, if not in the whole world, and, seeing the need for the production of iron ore in the country, some attention should be paid to the supplies in Cornwall.

Mr. P. Y. Alexander then read a paper on "Aerial Communication," which appears in another part of the Report.

The President said that Mr. Alexander's paper was most interesting, but hoped he should not live to see the state of things described in it. It would be rather a dreadful world to live in.

Mr. W. Ll. Fox read extracts from *Nature* which contained a review of a book written by the famous airman Graham White on air power, which prophesied what the future would be as regarded aerial service.

Sir Arthur Pendarves Vivian, of Bosahan, said he had not heard all the discussion that afternoon, for he was as deaf as a German editor was for the truth. (Laughter.) He happened to be in London during one of the recent raids, when he personally saw the German aeroplanes coming down from the North, and then proceed to the South. Those aeroplanes appeared to be flying much higher than our own which went up in pursuit. The Germans seemed to have a most wonderful command of their machines. The streets were cleared in a most extraordinary way. He should say it was a difficult thing to judge the height at which the Germans were flying, and they dropped their bombs with much uncertainty. He remembered going up 15,000 feet in a balloon in London on one occasion, and they had no idea of where they were—they might have been over France for all he knew. (Laughter.) One looked forward to the time when there would be aerial communications. The war had taught them a great deal, and he hoped it would prove of great value to them in the future. He thought they would have a hard time as regarded their industries after the War, and they must look upon the present prices as inflated, for no doubt there would be a severe drop sometime, and he only hoped that it might be a gradual one so that they might be able to shape their industries to meet the coming times. (Applause.) It was more than fifty years ago since he first attended a meeting of the Royal Cornwall Polytechnic Society. (Applause.)

The President said an interesting telegram had just been

received from the Aeroplane Construction Department, "somewhere," wishing the meeting a success.

Proceeding, the President said they would be pleased to hear that the eldest son of their valued Secretary, who was an officer in the Royal Engineers, had had the Military Cross conferred on him. (Applause.) The award was for an act not only of great bravery, but extreme endurance, for **Second Lieut.** Garnet Newton seemed to have gone through a barrage to search for two of his men who were missing. The young officer went through this barrage to look for his men, and back again through another barrage of German shells, and during the whole of this time—four hours—he was wearing a gas helmet. (Applause.) The Military Cross was only second—and a very good second—to the greatest of all distinctions—the Victoria Cross. He believed the Military Cross was instituted because the Government did not want to give away too many V.C.'s. But that did not make the Military Cross cheap, for it only meant there were a great many brave men in the British Army. (Applause.) He thought they would all like to congratulate Mr. and Mrs. Newton (and he was glad to see Mrs. Newton present) on having such a brave and worthy son. (Applause.) The young officer enlisted in the early part of the War—before there was any talk of compulsion, and as soon as his qualifications were found out he was given a commission. He (the President) had seen a letter received by the parents from their son's captain in which he spoke extremely highly of him. (Applause.)

Mr. Newton, in reply, said that it was a very proud moment for him when he heard of his son's success, and when he received the good news from his son's commanding officer they could imagine how welcome it was; but that was a prouder moment still when he heard his son's action being recognised in such a manner. They were living in times of great anxiety, and consequently were all doing what they could to help in the War. The son who had distinguished him-

self was, in a way, identified with the Polytechnic Society, for there were many present who would remember how he had assisted him in carrying out the various exhibitions, and his younger brother was helping his father at the present moment in the same way. (Applause.)

Mr. F. J. Bowles, J.P., proposing a hearty vote of thanks to the speakers and to the President, also referred in eulogistic terms to the distinction conferred on Mr. Newton's son, and added there would be few memories after this great struggle which would be more satisfactory and lasting than the gallant way in which their young men had come forward and done their duty.

The Rev. Rogers Enys, seconding, referred with satisfaction to the fact that the members of the Society still rallied around it to keep it alive. He hoped that when peace returned, they would be able to resume their work on a larger basis for the future prosperity of the County.

# The Dedications of Churches.

PRESIDENTIAL ADDRESS AT THE SUMMER MEETING OF THE  
ROYAL CORNWALL POLYTECHNIC SOCIETY, *August 21st,*  
1917.

BY HENRY JENNER, F.S.A.

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LAST year my Presidential Address had for its subject "The Irish Immigrations into Cornwall in the Fifth and Sixth Centuries." This time I propose to give an address which to some extent arises out of the last one, and to make some inquiry into the methods of the Dedications of Churches, with special reference to Cornish Churches. In one way Cornish dedications have been done before, and very ably, by the Rev. S. Baring-Gould, in a long alphabetical series of Lives of Cornish and other Saints in whose honour Cornish Churches are dedicated. This series ran through the Journal of the Royal Institution of Cornwall from 1899 to 1907, and was preceded by a very interesting Presidential Address on the Celtic Saints in general. I am not going to try to compete with him in any way, but shall take an entirely different line, not of detail but of general principles.

It cannot be too strongly asserted that churches are not dedicated *to* Saints. People commonly talk of churches being dedicated to St. John, St. Paul, St. Mary, or whatever the name may be. This is entirely wrong. They are dedicated to God only. You may talk, no doubt, of a church being dedicated to the Holy Trinity. You may say without peril of idolatry that Canterbury Cathedral is dedicated to Christ, or that the chapel of Downes Convent at Hayle is



dedicated to the Holy Ghost, but you must not say that London Cathedral is dedicated to St. Paul, or Paris Cathedral to Our Lady. They are not. They are dedicated, in honour, in memory or under the patronage of St. Paul and St. Mary, to God. Or one may say, as of persons, that the churches are "called after" St. Paul and Our Lady.

The system of dedicating churches arose in various ways and for various reasons. It began, no doubt, with the necessity for calling a church something, if only to distinguish it from another church in the same town or district. But from a very early time in the history of the Christian Church there have been motives for dedications, or perhaps one should say the naming of churches, which may be classified into five sections. These, put in what I believe to be their chronological order, are :—

1. Ownership or foundation. This form is so early as to be practically Scriptural.

2. Place of a martyrdom, or of some other event. As early as the third century at least.

3. Place of burial, or the possession of special relics. Also very early.

4. Commemoration, patronage or special devotion.

5. Memory of some event, usually in the life of Our Lord or of His Mother, or of some quality, aspect or attribute of the Deity.

Dedications for these reasons are found all through the Church, both in the East and in the West, but some of them occur more frequently in some places than in others.

The best place in which to study the subject is the City of Rome, whose ecclesiastical history from the times of the Apostles to the present day is more continuous and better authenticated than that of any other part of the Church. There are said to be no less than 365 churches in that city, one for every day of the year. This is very probable, for Baedeker gives the names of 320 of them, and I know of and have myself

seen some which he does not mention. Among these may be found dedications on every one of these five principles.

The oldest church in Rome is that called St. Pudenziana, on the Mons Viminalis. It is said, with much probability, to be on the site of the house of Pudens the senator, whose greetings, it will be remembered, St. Paul sends to Timothy, and it was in this house that St. Peter is said to have lived during a great part of his pontificate. Part of the building is old enough to have been part of that actual house. The comparatively late legend says that St. Pudenziana was the daughter of Pudens, and that St. Prassede, after whom a church close by is named, was another of his daughters. But it is now generally thought that "Pudentiana" is not a daughter, but an adjective of Pudens. In a sixth-century inscription the church is called "titulus Pudentis," and in all probability "Ecclesia Pudentiana" only meant what St. Paul would have called "the church that is in Pudens' house." Of course in the several cases where he uses such an expression he means the congregation, not the building, but the double meaning of *ecclesia* is quite early. In the last chapter of the Epistle to the Romans St. Paul sends greetings to Priscilla (or, as the best MSS. have it, Prisca) and Aquila, and to "the church that is in their house." It is quite possible that the Church of St. Prisca on the Aventine represents the place of that assembly to which St. Paul referred.<sup>1</sup> There is no doubt that the church of San Clemente, between the Colosseum and St. John Lateran, was the site of the house of St. Clement, the third successor of St. Peter, who is probably the Clement mentioned in the Epistle to the Philippians, and is certainly the author of one if not of both of the Epistles to the Corinthians which exist under his name. It is probable that the church of Santa Cecilia in the Trastevere is not only on the site of the actual house of the martyr, but is also the place of

<sup>1</sup> The Rev. George Edmundson in his Bampton Lectures for 1913, "The Church in Rome in the First Century," is of a different opinion, and thinks the tradition too late.



her martyrdom under the Emperor Alexander Severus (222 to 235), and one of the chapels is the bathroom of what is certainly a house of that period, with its heating apparatus visible. The house is said to have been made into a church by Pope St. Urban I (223 to 230) immediately after her death, though her body, which was buried in the catacomb of St. Calixtus, was not removed to that church till 821. St. Gregory the Great made his paternal mansion on the Celian Hill into a monastery and dedicated it in 575 in honour of St. Andrew, but it has been called "San Gregorio Magno" ever since the eighth century.<sup>1</sup> The church of Santi Giovanni e Paolo, also on the Celian Hill, is on the site of the house of two brothers, St. John and St. Paul, who were martyred under Julian the Apostate. There are several other similarly named churches, and one may fairly count some of the catacombs as being, so to speak, the family vaults of those after whom they are called.

There are several instances of churches built on the sites of martyrdoms. San Lorenzo in Panisperna or Panisperna on the summit of the Viminal Hill claims to be on the site of the *Thermæ Olympiadis*, the place of the martyrdom of St. Lawrence. The church is a very old one, though the present building had been so frequently restored that there is not much of the original left. Sant' Agnese in the Piazza Navona is on the site of that of St. Agnes. The piazza was the old Circus of Domitian, and the original church was in the side vaults of the circus. There are two underground chapels with the ancient vaulting left. The church of San Paolo alle Tre Fontane, outside the walls along the Via Laurentina, marks the place where St. Paul was beheaded, and the Church of St. Cecilia, already mentioned as being on the site of her

<sup>1</sup> There is an analogous case to this popular naming at Canterbury. St. Augustine founded an abbey in that city, and dedicated it in honour of St. Peter and St. Paul, but the name never "caught on," and it has always been popularly known as "St. Augustine's," though even now, as an Anglican missionary college, its great day is the Feast of St. Peter and St. Paul (June 29th).

house, was probably founded quite as much because it was there that, after an unsuccessful attempt to suffocate her in the bath which is still shown, she was killed with a sword. There are a good many more of these martyrdom churches in Rome, for there were innumerable martyrs in that city.

Analogous to these dedications are those which are given because of some event other than martyrdom which happened at the place. The earliest of this sort is probably the Church of the Resurrection at Jerusalem. This, ἐκκλησία τῆς Ἀναστάσεως, is the correct name of what is commonly called "the Church of the Holy Sepulchre." It was founded by Constantine the Great in about 328, and commemorates, not as the popular name would imply, the entombment of Christ, but the much greater event of His rising from the Sepulchre. At Bethlehem there is the Church of the Nativity, which includes in itself what has been reputed since the fourth century at least to be the actual stable in which Christ was born. In the time of the Pilgrimage of Etheria, which is possibly as early as the fourth century, there was a church known as the Martyrium, because, as Etheria says, "it was in Golgotha, behind the cross where the Lord suffered." This word *martyrium* is commonly used in its Welsh or Cornish form *merthyr* or *merther* for either a place of martyrdom or the burial-place of a saint. The chapel in the north transept of Canterbury Cathedral in which St. Thomas was murdered is known by the English equivalent "the Martyrdom." Etheria also mentions a church at Bethany called the Lazarium, which is on the spot "where Mary the sister of Lazarus met Christ six days before the passover." This refers to the supper at the house of Lazarus and the incident of the ointment of spikenard, mentioned in the twelfth chapter of St. John's Gospel. In Rome the "Domine quo vadis?" church on the Appian Way commemorates the vision of St. Peter, which is now well known to everyone from Sienkiewicz's novel and the extremely clever cinematograph show founded on it some years ago. There is

a stone in the floor with footprints carved on it, which is supposed to mark the spot where Christ stood. One need hardly say that they are not and never have been shown as the actual footprints.<sup>1</sup>

Probably the commonest of all the early dedications are those which come from the burial-places of saints and especially of martyrs. This is common throughout all Italy and fairly so elsewhere. First and most notable of all is the great Basilica of St. Peter in the Vatican. There seems to be no doubt, not from a controversial but from an historical and archæological point of view, that the body of the Prince of the Apostles really lies in the crypt under the "Confessio" of the church named after him, which was built over his tomb by Constantine the Great. If, as is possible, the martyrdom of St. Peter occurred during, or soon after, Nero's ghastly garden-party, of which Tacitus tells us, it is very probable that it happened somewhere very near where the church stands, so that the dedication has a double reason.<sup>2</sup> There is also very little reason to doubt that the body of St. Paul lies under the church of St. Paul outside the Walls, which was also founded by Constantine. San Lorenzo and Sant' Agnese fuori le Mura are built over the catacombs in which St. Lawrence and St. Agnes were buried. St. Mark's Church in Venice, not the present building, of course, but an earlier one, was built to

<sup>1</sup> A modern instance of this sort of foundation may be seen in Cornwall in Wesley Rock Chapel at Hea Moor, where in the middle of the floor is a piece of bare rock, on which John Wesley stood to preach.

<sup>2</sup> Nero's garden-party was probably in May, 65, and St. Peter's martyrdom may have been a little later, possibly on June 29th. The *Acta Petri* say that he was crucified "near the obelisk between the two goals" of Nero's circus. The Basilica stands on the site of this circus, and the obelisk, which had been brought from Heliopolis by Caligula, was moved to its present position in the centre of the Piazza di San Pietro by Sixtus V in 1586. The body of the Apostle had been buried close by, and a *memoria* erected over it, but it was removed for safety in 258 to what is now known as the catacomb of St. Sebastian, on the Appian Way. In about 307 it was taken back to the Vatican, to its former resting-place.

contain the body of the Evangelist, which was stolen from Alexandria by the Venetians in 829. when they solemnly deposed their old patron St. Theodore. The cathedrals of St. James of Compostela, of St. Matthew at Salerno and of St. Andrew at Amalfi contain what are reputed to be the bodies of those Apostles. For the purposes of this inquiry it does not matter whether these relics are genuine or not. It is sufficient that when the churches were built they were honestly thought to be so. Speaking from a purely archaeological point of view, I am not inclined to believe in the existence of "faked" relics in any church with a reputation to lose, but mistakes are probable enough, though even these are not so common as many controversialists try to make out. There is no sort of doubt, however, that the later churches built over the tombs of saints do contain their genuine bodies. No one, for instance, can doubt that the body of St. Francis of Assisi lies in the church called by his name at Assisi, which was built two years after his death in 1226, or that the body, which I myself have seen, in the neighbouring church of Santa Chiara is really that of St. Clara, the foundress of the order of "Poor Clares," which is the feminine equivalent of the Friars Minor of St. Francis.

This form of dedication is very early. It probably originated in the custom, which goes back at least to catacomb days, of the use for the Holy Eucharist of an altar beneath which was the body of a martyr. The custom is so early that there may well be an allusion to it in the words of St. John : "I saw under the altar the souls of them that were slain for the word of God and for the testimony which they held." This comes as part of what is recognised by many liturgical scholars as a description of a Mass of primitive type mystically transferred to heaven, and of course the corresponding detail there would be souls, not bodies.

With churches built over the tombs of saints go those built in consequence of the possession of notable relics of other

sorts. Among these are the many churches of the Holy Rood, the Holy Cross, St. Cross, etc., all of which refer to the possession of fragments of the Cross found by St. Helena in 328. The church of Santa Croce in Gerusalemme, not far from the Lateran in Rome, was built originally by St. Helena to commemorate her discovery of the Cross. It does contain a not very large piece of it, but its principal relics are what are alleged to be the Title of the Cross, one of the nails of the Cross, and the cross of the Penitent Thief. The church of San Pietro in Vincoli in Rome was built by the Empress Eudoxia in 442 to contain chains, which as early as that date were believed to be those of St. Peter, and not improbably were. The chapel of the Saint Sang at Bruges contains a relic which is reputed to be some of the water with which St. Joseph of Arimathæa and Nicodemus washed the body of Christ after the Crucifixion, stained with the Holy Blood. And there are many more dedications of this sort.

But the commonest form of all dedications is in the names of saints who are in no wise personally connected with the places where the churches are. It is inevitable that this sort should be in a majority, for though there are a good many thousands of recorded saints, they are often crowded into certain centres, and are not sufficiently distributed throughout Christendom for us to find some for every locality. The reasons for this form of dedication are several. It may be in some cases merely commemorative, which is, I think, the usual, though not the only motive in the naming of modern Anglican churches, but the earlier idea was founded on the doctrine of the Communion of Saints and on the ideas underlying the very early practice of asking for the prayers of saints either by direct invocation or by praying to God for their intercession, and of placing the churches and their congregations under the special patronage and protection of the saints whose names they bear. In all the ancient liturgies are found prayers which illustrate this idea, the best known of which is



the clause "Communicantes" in the Canon of the Roman Mass. Among the earliest and commonest of these dedications are those in honour of Our Lady, St. Michael and St. John the Baptist. The reasons for dedications in honour of Our Lady are obvious enough. The wonder is that they do not occur earlier than they do. I think one of the probable reasons for this is that there is no place outside the Holy Land and Ephesus which was hallowed by her bodily presence. But a still more weighty reason is that no church has ever even claimed to possess her body or any part of it. Those of us who went to church last Wednesday, 15th August, will understand why. The oldest church of St. Mary in Christendom is perhaps that called Santa Maria Maggiore, on the Esquiline Hill in Rome.<sup>1</sup> This great Basilica was founded in

<sup>1</sup> At the time of reading this paper Canon Burns pointed out that a passage in the Lessons for the Feast of Our Lady of the Snows in the Roman Breviary seems to imply that there were already many churches of Our Lady in Rome. The passage to which he referred is as follows: "Variis nominibus primum est appellata: Basilica Liberii, Sancta Maria ad Præsepe; sed eum multae iam essent in Urbe Ecclesiae sub nomine sanctae Mariae Virginis; ut quae Basilica novitate miraculi, ac dignitate ceteris eiusdem nominis Basilicis praestaret, vocabuli etiam excellentia significaretur, Ecclesia sanctae Mariae Majoris dicta est." I do not think that this necessarily implies that *at the time of the foundation of the Church* there were many others of the same name, but only that when it got to be called "St. Mary the Greater" there were already many others. There was a church called "Santa Maria Antiqua," which stood on the site of the present church of Santa Francesca Romana, between the Forum and the Colosseum, but this occupied part of the site of the great temple of Venus and Rome, which was founded by the Emperor Hadrian, and rebuilt with great splendour by Constantine after a fire. The temple was certainly standing as a temple as late as 356 (Ammianus Marcellinus xvi. 10) and was not likely to be handed over to the Christians until much later than that. Nothing is known, not even the name, of this church, before the eighth century, and it was never one of the "tituli" or old parish churches of Rome. Of the eighty existing churches of St. Mary in Rome the only ones that could possibly claim to be older than Santa Maria Maggiore are Santa Maria in Trastevere, said on no very convincing authority to have been founded by Callixtus I. (218 to 223), though the earliest mention of it is in 499, Santa Maria in Cosmedin, which is said to have been founded in the third century, though, as it occupies the site of a

about 360 by Pope Liberius and a Roman patrician named Johannes. A not very early story says that it was founded in consequence of a vision of Our Lady, who predicted as a sign a miraculous fall of snow on August 5th. That day is still in the Calendar as "*Festum Sanctæ Mariæ ad Nives*," the Feast of Our Lady of the Snows. There are no less than eighty churches of St. Mary in Rome, differentiated by epithets of various sorts. A very large proportion of the French cathedrals, including those magnificent ones of Paris, Amiens, Rheims, Chartres and Rouen, are called "*Notre Dame*," and in France, Belgium and Germany in many towns, where the cathedral has some other dedication, one commonly finds another great church called "*Notre Dame*" or the "*Frauenkirche*." The reason of the dedication of the cathedral of Chartres is rather interesting. Chartres, so called from the Carnutes, an important Gaulish tribe, was the centre of Druidism in Gaul. There was there a cave in which the pagan Gauls were said to worship "a virgin who should bear a son." When the pagan temple was taken over by Christians, it was a very natural thing to dedicate it in honour of the Virgin who did bear a Son. I do not know what may be the authority for the story that there was such a temple at Chartres, though Julius Cæsar in his account of the Druids (*De Bello Gallico*, lib. vi.) says that at a certain time of the year they assembled at a consecrated place in the territory of the Carnutes, which

temple, parts of which are built into it, this is highly improbable, and the Ara Cæli Church, which is said to be in the place where the Sibyl of Tibur appeared to the Emperor Augustus and revealed to him the Birth of Christ. In the last there is an ancient altar inscribed "*Ara Primogeniti Dei*," said to have been put up by Augustus, but a Christian church in the Arx of the Capitol was unlikely until the time of Theodosius at the earliest. Richard Whytford's English translation of the Salisbury Martyrology (1526), if that is any authority, says under August 5th: "At rome y<sup>e</sup> feest of our lady called y<sup>e</sup> feest of saynt Mary at the snowe, bycause the fyrst chirche of our lady in rome was buylded by a revelacyon & a myracle of snowe y<sup>t</sup> fell there in grete quantite the v. day of August."

may well have been Chartres ; but the special dedication of this temple, though not mentioned by Cæsar, is often spoken of, and is even given as a commonly accepted fact by the prosaic Baedeker.

In England the number of cathedrals of Our Lady is not so great as in France. Only two of the old ones, Lincoln and Salisbury, are dedicated in her name alone, but there are several called of " Christ and St. Mary," and some in which she is associated with other saints. But the number of parish churches dedicated in her honour runs into thousands.

It is not very easy to decide which was the earliest church of St. Michael. There was one at Constantinople which was said to have been founded by Constantine the Great (d. 337), the dedication of which was commemorated on June 8th, but is not mentioned in the present books of the Orthodox Eastern Church. There was a church at Colossæ in which St. Michael is said to have appeared and worked a miracle at a very early date, though that date is rather indefinite, and according to the account in the Greek Menaion this church already bore the Archangel's name. In the so-called Leonine Sacramentary, the manuscript of which is not earlier than the seventh century, though its composition is attributed to Pope St. Leo I (d. 461), there is a service for the Feast of the Dedication of the church of St. Michael in the Via Salaria (Natalis Basilicæ Angeli in Salaria), for September 30th. This church, which was at the sixth milestone along the Salarian Way, has completely disappeared. The Feast of St. Michael " and the rest of the Bodiless Powers " on the 8th November in the Byzantine rite is said to commemorate the dedication of the church of St. Michael in the Baths of Arcadius in Constantinople, which seems to be early fifth century. But the most important and one of the earliest churches of St. Michael in the West is the foundation on Monte Gargano, in South Italy, which was founded in consequence of a vision of the Archangel, who is said to have



appeared to Laurentius, Bishop of Sipontum, in 495. The Apparition is commemorated on May 8th, and the dedication of the church built on the spot on September 29th, which since that time has been the Feast of St. Michael and All Angels throughout Western Christendom. I wonder how many people who keep Michaelmas Day know what they are really commemorating. Later, in the time of St. Gregory the Great (590) during a great pestilence in Rome, St. Michael is said to have appeared on the mausoleum of Hadrian beside the Tiber, and that huge tomb has been called the Castle of Saint' Angelo ever since. It was a very natural thing for people to wish to place themselves under the protection of the great Archangel, the Ἀρχιστράτηγος (or Commander-in-Chief) of the Host of Heaven, as the Greeks call him, and there is no need to look for any transference of a pagan idea in doing so. Jewish, perhaps, but not pagan. But there is little doubt that in the common custom of calling churches on high places after St. Michael there is a suggestion of the pagan custom of putting temples of Apollo in such places. In the East "St. Elias," the prophet Elijah, very commonly takes the place once held by Apollo as the guardian of high places. This may have been suggested by the chariot of fire compared with the car of the sun, or by the similarity of the Greek Old Testament form of his name, Ἡλίου, to the word ἥλιος, the sun, with the genitive of which it is almost identical. In the *Annales Cambriæ* under the year 718 there is an entry recording the consecration of the church of St. Michael. This has been taken to mean one of the many "Llanfihangels," churches of St. Michael, in Wales, but I think it really means the dedication of the church on Mont St. Michel founded by St. Aubert of Avranches after his vision in 708. This is perhaps the first of the Celtic dedications which afterwards became so popular. It will be noticed that many churches of St. Michael in the British Isles are on the tops of hills. St. Michael's Mount, Brent Tor and Glastonbury Tor are three that occur to one at

once. It may be noticed also that a good many of these dedications claim to be in commemoration of visions or apparitions of St. Michael.

Churches of St. John the Baptist began by being baptisteries, which is an obvious motive. The most important of all, the basilica of St. John in the Lateran, which is the cathedral of Rome, did not bear his name until its rededication in the early tenth century, but the baptistery of it, which dates from the fourth century, and which served as a model for all Western baptisteries, was called after him when it was built. The well-known baptisteries of Ravenna, Pisa, Florence, Siena, and many other Italian towns are nearly all called "San Giovanni Battista" or "San Giovanni in Fonte." But in later times dedications of this sort were made out of devotion to this saint on general principles, and very often through the influence of the great military order of the Knights Hospitallers, or Knights of St. John.

It would take too long to go into the motives of the dedications in the names of other saints. Fashions in saints are very noticeable things, and these fashions appear in the dedications of churches as well in the giving of baptismal names. St. Peter and St. Paul, either together or separately, as the founders of the Church in the city from which so many of the western missions came, would naturally be favourites at one time. There was a time when for some reason or other St. Anne, St. Catherine and St. Margaret were the favourite female saints in England, and their names were constantly given in baptism, and the number of churches called after them is very great. From his martyrdom on 29th December, 1170, to the time of Henry VIII, St. Thomas of Canterbury was extremely popular in England, and it is probable that of the innumerable pre-Reformation Thomases and churches of St. Thomas throughout the country most had him and not the Apostle for their patron. Churches of his name are rare elsewhere. The only one I remember to have seen abroad is at

Verona. A very popular saint in England was St. Martin, practically the founder of Gaulish monasticism. The earliest church called after him anywhere was St. Ninian's foundation at Whithorn in Galloway, to which his name was given by the founder on hearing of the saint's death in about the year 400. Everyone knows St. Martin le Grand and St. Martin's in the Fields in London; and the church of St. Martin at Canterbury, in which St. Augustine baptised King Ethelbert in 597, is perhaps the oldest existing church in England, dating from before the coming of the Saxons in the middle of the fifth century. The churches of St. Martin throughout England and Scotland are very numerous, and in the latter kingdom Martinmas, 11th November, took the place of the Celtic "Samhainn," 8th November, as one of the two "term-times" of the year. But as a general expression one may say that this form of dedication in honour of a saint unconnected with the place was usually regulated by fashion or by individual taste and fancy, or, to put it better, by special devotion to some particular saint. There were also legends of visions of certain saints, which in many cases, no doubt, arose out of this special devotion.

The last class, dedications in memory of some event, or of some quality, aspect or attribute of the Deity, is not so common as are the other classes. There are, of course, a large number of churches of the Holy Trinity, Christ Churches, St. Saviours, and the like, some of them very early of date, and there are some, but not very many, called after the Third Person of the Holy Trinity. There are also churches of the Holy Name, of the Precious Blood, of the Sacred Heart and the like. The church commonly called "St. Sophia" in Constantinople was called by Justinian, its founder, after the Holy Wisdom, ἡ Ἀγία Σοφία, which is really a dedication to Christ as the Word of God. Dedications in memory of events are less common, though if one looks through the list of churches in *The Catholic Directory* one will see that there is

a considerable fashion in that sort of dedication in England in modern times. The cathedral of Moscow is called the *Uspenskie Sobor*, which means that its full dedication is the *Uspénie Presvyatíya Bogorōditsi*, the Falling-asleep of the All-Holy Mother of God, which in the West we call the Assumption, an event about which the Orthodox Eastern Church, in spite of the difference in the name of the feast, holds exactly the same belief as does the Latin Church. But ancient and mediæval dedications of this sort are not very common.

I have been a long time in coming to the dedications of Cornish churches, but my object has been to show something about the general principles which have from time to time regulated the system of church dedications, and I have as yet taken those principles as applied to other countries, and especially to Rome, where they may be studied more fully than anywhere else, because of the very large number of churches there and their continuous history. Also it is very probable that, apart from any question of Papal jurisdiction, the capital city of the Roman Empire would naturally set the fashion in this as in other matters to the Empire, and the motives which decided these things in Cornwall were very much the same as elsewhere. But when one comes to the statistics of the different classes, there is a very noticeable difference in Cornwall, as in other Celtic countries. And what applies to Cornwall applies also to Wales, Scotland, Ireland and Brittany.

There are about 212 old parish churches in Cornwall, and of these no less than 101 are called after their founders or persons who may reasonably be presumed to be their founders, while of the 150 or more of the smaller religious establishments, places whose names begin with *lan* or *mena*, a very large proportion are called after founders too. In one sense these are not true dedications. I do not suppose that anyone ever deliberately put the church of St. Erth, for instance, under the patronage of St. Erc. It was simply called

St. Erc's Church because it was his and he built it, and he could not possibly have dedicated it in his own honour. He may, perhaps, have given the church a dedication when he founded it, but, if he did, that is forgotten and his name is still attached to it, even though St. Gwyddno at a later date seems to have set up a *Lan* there, which was called *Lanuthno* after him. Though in its origin it was no more a dedication than are the names of Whitfield's and Spurgeon's Tabernacles in London, and less so than Wesley Chapel in Camborne, it became one later. It would be very natural for St. Erth people to feel sure that from his place among the Blessed their founder would watch over his old church and those who worshipped in it. So probably without any definite formality he became their patron. Sometimes a founder patron was deposed in the Middle Ages by what one can only call a piece of religious snobbery on the part of Norman bishops and up-to-date congregations. No doubt it was thought rather a fine thing to take for patron some well-known saint from the general calendar instead of one of our poor little obscure Cornish saints. Thus it was that after St. Piala, the founder of the church of Phillack, had been patron there for many centuries, it seemed good to somebody in the fourteenth century to rededicate the church in honour of St. Felicitas, who was not even the very interesting St. Felicitas of Carthage, who is mentioned in the Canon of the Roman Mass, and of whom we know so much from the Acts of St. Perpetua, possibly written by her contemporary Tertullian, but a rather obscure martyr in Rome in the time of Marcus Aurelius. The church of St. Merryn was rededicated about the same time in honour of St. Thomas of Canterbury, and there are several other instances. The reason for the great number of founder-dedications in Cornwall, as in Wales and Brittany, is found in the history of Celtic Christianity. Last year I told you something of the story of the coming of the Irish missionaries to Cornwall and of the foundation of the little self-



dependent religious settlements by them and by the Cornish, Welsh and Breton missionaries who had come under the influence of their monastic organisations. From the probably quite undesigned popular naming of these settlements grew the later dedications in honour of these founders. Very few, if any, of these Cornish saints are in the general calendar. There are about five or six thousand names of saints in the Roman Martyrology of the present day, and with the exception of St. Patrick, St. Columba, St. Bridget and some who founded churches on the Continent, like St. Fursey of Peronne and St. Frigidianus of Lucca, there seem to be hardly any of these fifth and sixth century Celtic saints among them. There are, however, a fair number in the Salisbury Martyrology. Of course it is unhistorical to talk about "canonisations" with reference to that period, and there are plenty of generally recognised saints who received no more canonisation in the modern sense than these did. But that question would involve a very long discussion. Suffice it to say that these founders were locally acknowledged to be saints in any sense of the word, and the modern dedications of churches of St. Piran at Truro, St. Petroc at Padstow and St. Ives at St. Ives show that they are sufficiently recognised at Rome now.

There are very few churches in either Wales or Cornwall which are alleged to be on the sites of martyrdoms and derive their dedications from that fact. The reason is simple. There were very few martyrdoms. Gwinear Church is no doubt in the place where King Tendar killed St. Gwinear (or Fingar), and, whether rightly or wrongly, he was considered to be a martyr. According to a legend mentioned by Nicholas Roscarrock, St. Columba, Virgin and Martyr, was killed by one Ruan, whose advances she repelled, either, according to one form of the story, at Ruthvos, or according to another somewhere about where the church of St. Columb Major now stands. The beautiful churchyard cross at St. Columb is supposed to mark her burial-place. But her story is rather

jumbled up with that of St. Columba of Sens, though Roscarrock says that he had seen a life of her in Cornish, which has since disappeared. These seem to be all, unless St. Melorus, who is a very shadowy character, was martyred either at Linkinhorne or where the church of St. Mylor stands. He is said to have been killed in Cornwall, and eventually buried at Amesbury in Wiltshire, but his story is a very improbable one. Of *Merther* (i.e. martyrdom) churches or chapels, which in Cornwall, as in Wales, do not imply the place of martyrdom, but the burial-place of a martyr or other saint, there are very few. The parish of Merther has for patron St. Coan, of whom nothing is known. Merther Uny, in Wendron, probably marks the burial-place of St. Uny, the brother and one of the companions of St. Ia, and Merther Darva, in Camborne, that of St. Derva, another of St. Ia's missionary band. But it is very likely that a great many of the founder saints were buried in their own churches. We know that St. Piran was, and that his relics were a much treasured possession of Perran in the Sands in the Middle Ages. There is known to have been a shrine of St. Neot in his church, and there is still that of St. Endelienta at Endellion, and how many more there were of which all record was lost in the stupid destructions in the sixteenth century we have no means of knowing. Of relic churches other than burial-places there are apparently only the two Holy Cross Churches in Cornwall, one the chapel of the Guild of the Holy Rood at Bodmin, of which the tower and the burial-ground are all that exist now, and the other the church of Grade, which is called "*Ecclesia Sanctæ Crucis in Kerrier*" as early as the middle of the thirteenth century. This is probably the church to which Sir Roger de Welles-borrowe gave a part of a relic of the True Cross which he acquired in a not very creditable though miraculous manner in the Holy Land, according to a legend recorded in Harleian MS. 2252 in the British Museum, for a fuller account of which see the Journal of the Royal Institution of Cornwall for 1917.

Possibly Sancreed may be not, as has often been stated, the church of St. Sancredus or St. Cridus, but "St. Rood," Holy Cross. An alternative name is "Sanerus," which may be either "St. Cross" or "St. Rood" with the common late Cornish change of *d* to *s*. But this is pure conjecture. One can only say that it is possible.

There are about a hundred of the old churches and chapels in Cornwall which are called after saints that are unconnected with the localities. Of these the largest class are, of course, New Testament saints, among whom, though she is not mentioned in the Bible, one may fairly count the mother of the Blessed Virgin, St. Anne. It stands to reason that Our Lady must have had a mother, and her name may just as well have been "Anna," which is the Hebrew *Khannah*, grace, as anything else, though the earliest extant authority for it is the Protevangelion, or Apocryphal Gospel of St. James, a work which is probably not earlier than the third century, if that. St. Anne is the most popular of all the saints in Brittany, and is accounted the patron of that land. But in Cornwall there are only four recorded dedications in her name, East Looe and Whitstone, and two ruined chapels, at Bodmin and Tregony. There are only seven St. Mary churches, Truro, Botus Fleming, Braddock, Callington, Week St. Mary, St. Mary's, Scilly, and possibly Sheviock. The large number of "Llanfairs" (churches of Mary) and other dedications in her honour in Wales are attributed by Mr. Fisher, I think rightly, to Cistercian influence in the twelfth century and after. There was no Cistercian influence in Cornwall. There are, however, a certain number of holy wells of St. Mary, Lady Wells, etc. But the most popular saint in Cornwall is certainly St. Michael. The churches of Bude, Helston, Lawhitton, Lesnewth, St. Michael Carhayes, St. Michael Penkivel, Michaelstowe and Trewen, as well as the great foundation on the Mount, are all St. Michael's, there are chapels of St. Michael on Roche Rock, Roughtor, the Rame Head,



Porthilly in St. Minver, and there were several others, of which even the ruins have disappeared. This is what might be expected. St. Michael dedications are, next to founder dedications, the earliest and commonest in all Celtic countries. I do not think that any of them are earlier than St. Aubert's foundation on Mont St. Michel in 718, but this was followed by the dedication of our Mount, with a similar story of a vision, very soon after, and certainly St. Michael was very early accepted as the patron of Cornwall. St. John the Baptist has apparently no churches in Cornwall, though there are a few holy wells, probably once baptisteries, called after him, and there was a Hospital of St. John at Helston. It is possible that Lanyon in Madron is St. John's "Lan," and may have belonged to the Knights of St. John at Landithy, but on that we have no information. There was also a commandery of the Knights of St. John at Trebigh, in St. Ive, and their badge, the Agnus Dei, or "Lamb and Flag," is a very common device for a tin stamp. Of the Apostles, St. James the Great is the most popular. This is perhaps due to the popularity of pilgrimages to Santiago de Compostela. There are five churches and chapels in his name, Jacobstowe, Kilkhampton, and, as a mediæval rededication, Antony East, and chapels, now destroyed, at Boscastle and Tregony. Of the other Apostles St. Andrew has three, Calstock, Stratton and Tywardreath, St. Peter two, Landrake (a rededication, for the original, as the name implies, was St. Indract or Ildract, an Irish founder saint), and a destroyed chapel at Polperro, which probably means St. Peter's Pool. The last dedication is natural enough in what is essentially a fishing village. St. Bartholomew has two, Lostwithiel and Warleggan, there is one of St. Thomas the Apostle at Launceston, and one of St. John the Evangelist at St. John, on one of the creeks of the Hamoaze. There are four churches of St. Stephen; Launceston, St. Stephen in Brannel, St. Stephen-by-Saltash, and, as a secondary dedication, Mawnan. And the principal church at Launceston is St. Mary Magdalen's.

Among the later dedications next to the Apostles come the early martyrs of the times of persecution. Of these St. Agnes has two dedications, one at what we call "St. Anns," which is really only an old pronunciation of "Agnes," and one in the Scilly Isles, St. Symphorian of Autun two. Forrabury and Veryan, St. Clement of Rome two, St. Clement and Withiel, though these may have been originally called after a Celtic Clement, the father of St. Petrock, St. Denis three, at St. Dennis, where the dedication may have been suggested by the position of the church in a *dinas* or castle, Otterham and North Tamerton, St. Catherine two, at Marazion and Temple, St. Blaize one, at St. Blazey, St. Cornelius, Pope and Martyr, one at Cornelly, and St. George and St. Margaret had chapels, now destroyed, at Bodmin. These are all fairly common dedications elsewhere, but there are some unusual ones. Thus there are four, St. Juliot, Lanteglos-by-Camelford and ruined chapels in Tintagel Castle and at Maker, called after St. Julitta, two, Egloskerry and St. Veep, the latter, of course, as a rededication, after St. Cyriacus or Quiricus, and one, Luxulyan (again as probably a rededication, for the original name was probably Lan-Julian), is called after SS. Cyriacus and Julitta. There seems to be no reason, except their very beautiful story, why this martyr mother and her child should be so popular. Also one is at a loss to account for St. Genesius at St. Gennys. There were two martyrs of that name, one who was a clown in a circus, who was suddenly converted while he was engaged in burlesquing a Christian baptism, and the other a very ordinary martyr at Arles. They both happen to have the same day (25th August), and the parish feast of St. Gennys, which is Whit-Sunday, does not help us to settle which of them it was.<sup>1</sup>

<sup>1</sup> There was possibly an earlier dedication in the name of a Celtic saint with a similar name. Mr. Baring-Gould suggests St. Gwynys, one of the children of Brychan, or, on the authority of a calendar of Launceston, quoted by William of Worcester, an Irish St. Genesius, whom he conjecturally identifies with St. Canice of Achadboe and Kilkenny.

St. Protus, in whose honour the church of Blisland is dedicated, is a rather unlikely person. He and his brother St. Hyacinth were martyred under Gallienus, but there is nothing especially interesting about them. One later martyr has or had four dedications. There is a ruined chapel of St. Thomas of Canterbury in the churchyard of St. Petrock's, Bodmin, the College of Glasney, in Penryn, founded by Bishop Bronscombe in 1265, was dedicated in his honour, and there was a chapel of St. Thomas, licensed by Bishop Stapeldon in 1312, at Camelford, but both of these have been destroyed. The church of St. Merryn was rededicated in his name, and the parish feast changed to July 7th, the Translation of St. Thomas, in the fourteenth century.

After martyrs come early saints who were not martyrs. Of these St. Martin, to whom, as practically the founder of Western monasticism, there has always been a great devotion in the West, leads off with six, Liskeard, Lewannick, St. Martin-by-Looe, St. Martin in Meneage, St. Martin in Seilly, and a chapel, now destroyed, at Respryn in St. Willow, besides a doubtful rededication at Camborne. Next, as is likely in a seafaring country, comes St. Nicholas, the patron of sailors, with churches at West Looe, Tresco in Seilly, Tresmere, with St. Perran at Perran Uthno, and with St. Faith at Saltash.

There are four churches dedicated in honour of a St. Anthony or Antoninus, it is not always quite clear which. Three of these, St. Anthony in Meneage, St. Anthony in Roseland, and Anthony East, are situated on creeks connected with or leading out of larger harbours, Helford River, Falmouth Harbour and the Hamoaze respectively. I do not know whether this is merely an accidental coincidence or whether there is anything in it, and there are so many saints of those names and the two forms are so mixed up that it is not very easy to determine which of them is intended. Menheniot Church is St. Antoninus as a mediæval rededication. Originally it was *Menehi Neot*, St. Neot's Sanctuary.

St. German of Auxerre has two churches, St. Germans and Rame. After his mission against the Pelagians in 429 he was a likely saint to be honoured in Britain. St. Werburgh, a Mercian princess and abbess (daughter of King Wulfhere), after whom what is now Chester Cathedral is named, has two churches in Cornwall, Treneglos and Warbstow, both in districts which came very early under Saxon influence. St. Hilary of Poitiers at St. Hilary, St. Swithin of Winchester at Launcells, St. Felix at Philleigh, St. Ordulph at Pillaton, St. Olaf at Poughill, and St. Cuthbert at Cubert, have one apiece, and there were chapels, the first two of which are now destroyed, of St. Leonard at Bodmin, St. Henry the Hermit and St. Decuman in Wendron, and St. Nighton or Nectan at St. Winnow. There was a small priory of St. Bennet (or Benedict) at Lanivet, which, except for the Mount, was the only Benedictine house in Cornwall, but very little is known of it.

Last, but by no means least in interest, is the dedication of Falmouth Church in honour of King Charles the Martyr. It is a rare honour, of which I hope Falmouth is properly proud, for there are only four other churches of King Charles in the world. For a church within sight of Pendennis Castle, the last fortress but one to hold out for the King, it is singularly appropriate.

Nearly all these dedications in honour of saints unconnected with the localities are comparatively late and commonplace, almost the only ones of historical interest being those of St. Michael, St. Martin, some of the Gaulish saints, such as St. Hilary, St. Symphorian and St. German, and the seventeenth-century church of St. Charles, K.M. There are, however, some dedications in the names of Breton saints which may have more historical interest in them, if we could only find out the facts. One knows with fair certainty that St. Samson of Dol founded churches at Golant and Southill, but there is no means of knowing whether St. Corentin had

personally anything to do with Cury, St. Winwaloe with Gunwalloe, Landewednack, Towednack and Tremaine, St. Meugan with the two Mawgans, St. Meriadoc with Camborne, or St. Azenora, the mother of St. Budock, with Zennor, and there are a number of *lans* and *tres*, generally clustered in certain districts, which seem to embody Breton names. There is some reason to think that colonies of Breton missionary monks came over and settled in Meneage, the name of which means the Monks' district, but whether the more noted Breton saints actually came here and founded the places called after them, or whether this naming was dedication of the later sort, at present we do not know. I am inclined to think that though St. Paul of Léon was certainly in Cornwall in the middle of the sixth century, and he and his sisters, St. Gulval and St. Sidwell, founded churches which now bear their names, and probably St. Ruman, whom we call Ruan, and whose body rested at Tavistock Abbey, came somewhat later, the bulk of the Breton colonies were not earlier than the seventh or possibly the eighth century.

Of dedications of the last class of which I have spoken there is only one in Cornwall. The dedication of the church of Boyton is "The Holy Name."

It will be seen that a very large proportion of the dedications of Cornish churches commemorate actual founders, and if one adds to the existing ones those which are known to have been changed in the Middle Ages, and the smaller *lans* of which only the names remain, such dedications will be in a large majority. The historical value of this fact is great. By means of it we can divide the county up into districts and spheres of influence—Irish, Welsh, Breton and native Cornish—in a very remarkable way, though one must beware of carrying this classification too far, and denying the possibility of sporadic settlements of one nationality in the middle of those of another. After all the missionaries were all friends together, and were not trying to run rival sects or national



churches, so that there was no reason why, so to speak, they should "stake out claims" into which those of other nationalities were not to intrude. Such an idea probably never occurred to them.

It was the isolated condition of the Celtic Church, and the peculiar circumstances of its organisation, which caused this form of church-naming to continue in Wales, Cornwall and Brittany for so long after it had practically ceased elsewhere. Also there were so few martyrdoms that churches named after martyrs or places of martyrdom would be rare. The founders set up their churches peaceably, and, except for the little episode of King Teudar, almost without any violent opposition, and when they had done their work and fully developed their system of religious settlements, the new churches that were required would be simply, so to speak, "chapels of ease," not missionary settlements. Then fancy dedications, which had come to be the rule elsewhere, would come in here also, beginning in Cornwall, as in Wales, with those of St. Michael, and perhaps with some of St. Martin and St. German. Some of these may be as early as the eighth century, but the great majority of fancy dedications came in after the Norman Conquest, when Cornwall had come fully into line with the rest of the Church, and so present few points of separate interest.

In this paper I have not attempted to be exhaustive as regards Cornish church dedications, and there might be found a good many records of chapels, now no longer in existence, which I have not mentioned. What I have really tried to do is to give the general principles of the subject. Also I have said nothing about the neighbouring county of Devon, to which, as once part of the ancient Celtic kingdom of Damnonia, a good many of my remarks would apply. Since reading it, I have received from the author a very interesting paper by the Rev. J. F. Chanter on "Christianity in Devon before 909," in which, among other valuable information, he

gives a list of Celtic dedications in that county. They are nothing like so numerous as in Cornwall, for Saxon influence came there very much earlier, but there are an astonishing lot of them, including no less than twenty-two in honour of St. Petrock. How far all these were actually founded by that saint it is impossible to say, but it would seem as if a great deal of his work was done in the more eastern part of the Damnonian kingdom. The Celtic foundations in Exeter, St. David, St. Sidwell, St. Kierrian, St. Paul of Léon and St. Petrock, all in what was probably the British quarter, until Athelstan expelled the Britons from the city and drove them beyond the Tamar, are well known, but the evidences of the Celtic Church in Devon generally, as shown by place-names and dedications, would be well worth more extensive working out.

# The Great Perran Iron Lode.

BY ERNEST H. DAVISON, B.Sc., F.G.S.

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THE Great Perran Iron Lode outcrops in the cliff at the north end of Ligger or Perran Bay, where it is seen to be more than 100 feet in width, consisting (as Henwood described it in 1845) of "two great branches divided by a horse of killas." It strikes inland in a direction E. 30° S., as far as Duchy Peru Mine, some two miles in, and can easily be traced by the old workings and prospecting pits. From Duchy Peru Mine eastwards the lode runs almost east and west, and can be traced as far as Penhallow Moor four miles inland.

It is said to have been traced as far as Grampound, but only the first four miles have been worked to any extent, and surface indications beyond Deer Park are very slight and unreliable.

There were at one time as many as seven mines working on this lode :—

Gravel Hill or Penbale Mine on the cliff,

Halwyn Mine on the Sand Hills,

Mount and Trebicken Mine,

Treamble Mine,

Great Retallack Mine,

Duchy Peru Mine,

Deer Park Mine,

and trial pits on Penhallow Moor.

It is only by examination of the outcrops of the lode and by turning over the material in the old mine dumps that one can study the lode on the spot at the present time, so that one







has to rely on previous papers written when the mines were at work for reliable information as to the mineral character and structure of the lode.

The following descriptions of the old mines and the lode as worked in them have mainly been taken from old papers, a full list of which I give below. I should wish, however, to express my special indebtedness to the papers of the late Mr. J. H. Collins, the doyen of West Country geologists.

#### DESCRIPTION OF THE MINES.

##### *Gravel Hill or Penhale Mine.*

The outcrop of the lode in the cliff forms a prominent feature, there being two parts—one about forty feet in thickness, consisting of iron ore with strings and veins of quartz, with a band of ferruginous quartz breccia (the waste of which forms a well-marked deposit on the beach), and the other, about 15 feet thick, of clean ore with quartz on either side, the two branches being divided by about 45 feet of “killas.”

The lode dips to the south at about  $45^\circ$ , and the old workings of the Penhale Mine form cavern-like openings at the foot of the cliff. The adit mentioned by Mr. Collins as having been driven in the foot-wall about 1853 can still be traversed for a short distance.

Specimens of remarkably fresh chalybite were obtained in situ, as well as oxidised ore and hematite.

Mr. Collins in 1873 describes the mine as being a scene of great activity :—

“At the cliff itself, upwards of 180 feet high, where the lode divides into two, two large gangs of men are busily engaged in quarrying brown hematite of excellent quality . . . the old adit has been straightened and widened to allow the use of tram wagons, and a shaft has been sunk a little inland communicating with it. In the adit men are stoping ore at three different points.”

The Huel Golden lead lodes crossed the iron lode in this

mine, and, as was found to be the usual rule where lead lodes crossed the iron lode, fine patches of argentiferous galena were found at the intersections of the two lodes.

Two shafts are still to be seen at the top of the cliff, and a series of trial pits and shafts run east, which, however, are covered with blown sand and yield no exposure of the vein.

At Penhale Mine the lode was composed of brown hematite down to 12 fathoms, it then narrowed to 4 feet in thickness and contained chalybite with galena, blende and iron pyrites. The mine was worked to a depth of 20 fathoms.

In Gravel Hill Mine the ore was brown hematite near the surface and chalybite near the adit. At 13 fathoms level the lode was a mass of brown cellular iron ore about 9 fathoms in width.

### *Halwyn Mine.*

The old workings of this mine are almost wholly hidden in blown sand, but oxidised chalybite can be obtained from a small outcrop. This mine seems to have been but little worked. Mr. Collins writes of it in 1873 as having been proved satisfactory and mentioned the commencement of a vertical shaft which was sunk to a depth of 20 fathoms.

### *Mount and Trebysken Mine.*

The site of this mine is marked by great open workings by which the ore was worked out from surface, pillars being left to support the hanging wall. These pillars yield good specimens of the ore worked. At a later date a tunnel was driven from the valley below which cut the lode at about 20 fathoms from surface, but was abandoned soon after the lode was struck. The ore raised was mainly brown hematite, the workings not having been carried sufficiently far to reach the spathic ore. The lode was about 6 fathoms wide, but the best ore was confined to a width of about 3 fathoms, the rest consisting of a ferruginous breccia of quartz and "killas."

The iron lode is here crossed by the Trebisken and Trebellen lodes, and near the intersection with the latter rich argentiferous galena with native silver was found.

*Treamble Mine.*

Between Mount and Treamble the lode begins to strike more east and west. Mr. Collins maps it as being faulted here, but makes no mention of the fault in his paper, but at this mine the lode splits into several branches. From examination at the surface I cannot discover faulting, and no fault is mapped on the Geological Survey Map.

There are two open works on the lode, which are now much overgrown and flooded ; shafts were carried down on the lode from them to a depth of 18 fathoms as well as a shaft between the two driven in the back of the lode. In each of the quarries a silver lead lode was found crossing the iron lode, the galena yielding from 15 to 30 ozs. of silver to the ton. The iron lode near the surface consisted of brown hematite of inferior quality with a width of 6 fathoms, but spathic ore occurred in depth.

The mineral railway constructed to develop the mines connecting them with Fowey and Falmouth came direct to Treamble, and a track in excellent repair, but lacking rails and sleepers, now runs from here to join the Chacewater Newquay branch at Shepherds following the route of the old railway.

*Great Retallack Mine.*

Both in this "sett" and at Duchy Peru the work was evidently carried on more by shafts than by open quarries like those of Mount and Treamble. The waste heaps yield specimens of hematite, blende, and pyrites with garnet and epidote. Working was carried on to a depth of 60 fathoms, and the lode is reported as being 40 fathoms wide, but this is probably not a measurement at right angles to the dip. Near the surface the ore consisted of brown hematite and blende, the latter

becoming more prevalent in depth. Copper ore was obtained at 60 fathoms.

Mr. Collins notes the occurrence of a great mass of "hornblende rock" found in sinking Stephen's shaft. In this mine, near the intersection with the Peru lead lode, remarkable patches of argentiferous galena were found.

#### *Duchy Peru Mine.*

This mine is situated on the iron lode where it changes its strike to E.  $10^{\circ}$  S., there being several workings on the back of the lode. It was here that the Peru lode intersected the iron lode. Some parcels from the former lode yielding as much as 2000 ounces of silver to the ton.

Mr. Collins describes the sinking of Roebuck's shaft on the back of the lode, which struck it at 50 fathoms, the ore being "very fine white spathose."

The mine was sunk to a depth of 70 fathoms from the surface (30 fathoms below sea-level), the ore consisting of brown hematite for 20 fathoms from surface, with a thickness of 10 fathoms; below this was chiefly chalybite with large quantities of blende in places and also marcasite. This last mineral was the cause of much trouble, as its decomposition produced such a high temperature and so much "bad air" that working was seriously interfered with.

Mr. Collins describes how he attempted to determine the temperature in a "bad end" in 1873.

"The air is so bad that it is impossible to keep a light burning even for an instant, but I managed to penetrate to the extreme end . . . with a thermometer. On bringing the thermometer out to the light it was seen to be rapidly falling, but the temperature was then  $124^{\circ}$  F., at surface the temperature was  $64^{\circ}$  F."

A paper by Sir Warrington Smyth describes this mine very fully and the remarkable brecciated character of much of the lode.



“ At the 40, 50, and 60 fathom levels fragments of zinc blende form a valuable element in the breccia, pieces of all sizes, from the size of a nut to masses of several hundredweight, lie enveloped in a soft bedding. . . . The blende is peculiar for a mineral vein, the greater part of the lumps are dark brown, massive granular sulphide of zinc mingled with iron pyrites, but without any of the quartz or spars that usually accompany it.”

The workings in Swansea whin shaft explained the source of the breccia :—

“ Here resting against quartz on the foot-wall is the blende in a solid state some 10 feet in width and unbroken for many fathoms in length.”

The Duchy Peru Mine was one of the most productive on the lode. In addition to its output of iron ore it produced as much as 900 tons of zinc blende a month for some time.

#### *Deer Park Mine.*

This mine was the most easterly to be developed to any extent. The remains of extensive workings are to be seen.

The iron lode is crossed here by three or more lead lodes, but very little work was done on any of them.

#### *The general character of the lode.*

The lode in addition to its great width is remarkable for the large amount of brecciated material it contains. In its north-western part it consists of true fault-rock, and appears to be a fault with a more westerly bearing than the other cross-courses.

The evidence of Duchy Peru Mine, etc., and the brecciation along the whole course of the lode, show it to have been a line of great disturbance in two stages if not more.

The killas on either side of the lode has been much disturbed and several elvan dykes are cut and faulted by the lode.

The upper portion, which underlies more rapidly than

the deeper parts, is composed of brown hematite both cellular and compact; below this at varying depths, but always before sea-level is reached, the lode is composed of chalybite, which is sometimes associated with blende. According to Mr. Argall the blende affects the central portion of the lode.

At several points lead lodes cross the iron lodes, and at, or near, the intersections the greatest masses of iron ore were found, and the galena of the lead lode was particularly rich in silver.

The width of the lode varies greatly from 30 or 40 feet to a few inches. It strikes E.  $30^{\circ}$  S. from the coast to Duchy Peru, and thence E.  $10^{\circ}$  S., and has a general southerly dip of about  $45^{\circ}$ .

The following minerals have been reported from the lode :—

Hematite and brown hematite or limionite.

Chalybite, magnetite, cerussite, and pryolusite.

Iron pyrites, marcasite, copper pyrites.

Zinc blende, galena, native silver, argentite.

Pyromorphite, melanterite, copper vitriol.

Garnet, hornblende, pyroxene, epidote.

Quartz, both vein quartz and rock crystal.

And axinite within a short distance of the lode in the Greenstone of St. Piran's Chapel.

To the south-west of the lode, at Cligga Head, is an interesting outcrop of granite, and the metamorphism produced by this intrusion can be traced in the clay slate to the north to within about a mile and a half of the iron lode. In the immediate neighbourhood of the lode there are, however, no signs of igneous metamorphism in the clay slate. Nearer the lode, about a quarter of a mile distant on surface, close to the old cross on the sand hills, there is an outcrop of greenstone containing garnet, axinite, pyroxene, and epidote,



and garnet pyroxene and epidote have been found in association with the lode minerals at Great Retallack Mine.

As Mr. MacAlister has pointed out, this association of minerals is characteristic of lime-bearing rocks which have been subjected to pneumatolytic action, that is to the action of hot vapours, containing such elements as fluorine and boron, emanating from the cooling granite.

It is thus evident that the lode does not lie outside the region affected by the granite, but is probably of pneumatolytic origin.

In all respects it behaves as a true fissure vein, and is shown by the fact that it cuts and faults the elvan dykes to be of more recent age than their intrusion. Subsequently to its original formation the lode has been the scene of at least one other period of movement.

The upper iron-bearing part of the lode is shown by its oxidised and hydrated mineral contents to be of a gozzan character and is probably of no very great depth.

In depth (as Mr. Collins suggested in his work on the West of England Mining Region) there is every probability of its contents being either copper or tin, and of being similar in character to the more completely truncated lodes of the Camborne Redruth district.

Notwithstanding the probable limit in depth of the iron and zinc ore, there is no evidence that these deposits are to any appreciable extent exhausted.

The cessation of mining activity was, so far as I can discover, brought about more by the fluctuating character of the demand for iron ore and by the necessity for increased expenditure on pumping than by any shortage of the ore itself.

The development of the lode would no doubt require considerable capital, but the exploration of the lode by a series of drill holes should quickly solve the question as to whether further development would be justified or not.

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MINE.	LEAD ORE.	LEAD.	SILVER.	ZINC ORE.	IRON PYRITES.	HEMA. TITE.	OCURE AND UMBER.	SPATHIC ORE.	REMARKS
GRAVEL HILL ...	Tons. —	Tons. —	Ozs. —	Tons. 30	Tons. —	Tons. 10,050	Tons. —	Tons. 3,000	Between 1874 and 1882. The hematite yielded 47% Fe.
PENHALE ...	1,470	1,085	9,610	—	—	13,113	—	82	1849-1870.
MOUNT AND TREBISKEN	—	—	—	—	—	40,893	—	—	1859-1876.
MOUNT ...	—	—	—	—	—	5,942	—	—	1871-1874.
TREBISKEN ...	—	—	—	—	—	2,500	—	—	In 1873.
TREMBLE ...	32	24	130	7	—	24,738	—	958	1859-1892. Zinc Ore, 40% Zn. Hematite, 43% Fe.
GREAT RETAILLACK	287	215	600	17,060	—	17,490	—	—	1858-1880.
DUCHY PERU ...	3	1	—	27,151	1,001	26,295	180	11,000	1858-1886. 185 tons Ag. Cu. Ore in 1860.
DEER PARK ...	3	—	—	10	—	267	—	—	Iron Ore, 40% Fe. Zinc Ore, 20-47% Zn. 1875-1879.

## ANALYSES OF IRON ORE FROM THE GREAT PERRAN IRON LODGE.

SAMPLE.	SILICA.	PEROX- IDE OF IRON.	PROX- IDE OF IRON.	LIME.	MAG- NESIA.	ALUMINA.	SUL- PHURIC ACID.	PHOS- PHORIC ACID.	CARBON- IC ACID.	WATER.	MINE AND ANALYST.
BROWN HEMATITE IN BULK	4.2	69.1	—	0.8	—	—	none	0.24	—	11.6	TREMBLE
	10.0	78.1	—	trace	—	trace	—	1.44	—	10.0	TREMBLE
	11.4	70.8	—	—	—	2.07	1.12	1.84	—	11.4	GRAVEL HILL
	4.7	75.0	—	—	1.61	3.14	trace	2.21	—	12.5	DUCHY PERU <small>WORKS IN ROWES</small>
SPATHIC ORE	1.74	—	51.61	1.51	0.36	Manganese Protoxide 8.13	0.15	trace	35.55	—	TREMBLE
	0.64	—	56.24	0.21	0.45	4.28	trace	none	37.55	0.24	DUCHY PERU
	1.21	0.44	51.66	1.51	0.36	7.27	0.22	none	35.61	1.91	TREMBLE
PARTLY CALCINED ORE	7.54	37.46	18.23	4.22	2.30	8.80	none	0.3	16.3	5.0	By Dr. NOAD
SAME ORE COMPLETELY CALCINED	9.55	47.17	23.08	5.35	2.92	11.14	—	0.38	—	—	By Dr. NOAD
"OUTCROP" SAMPLES CHALYBITE	0.85	1.21	46.9	—	—	5.71	—	0.15	—	—	RETAILLACK E. H. D.
CHALYBITE	1.05	15.30	41.41	—	—	9.70	—	—	—	—	GRAVEL HILL E. H. D.

# Aerial Communication.

BY PATRICK Y. ALEXANDER.

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By Aerial Communication we have rapid, cheap and direct means of possessing at all times intercourse hitherto impossible by land or sea.

Man for centuries has harnessed and exploited the forces of nature for the use of mankind, and during the past decade he has made such wonderful progress that aerial communication may soon be as common as land and water communication is to-day ; this may lead to a redistribution encompassing nations for the greatest good for the greatest number.

Wireless telegraphy and telephony are but means of communication, and in the wireless transmission of power we may utilise forces which, from radiating sources, will supply artificially a rapid, cheaper and more direct method of carrying out our daily occupations.

Power, light, and heat have for centuries been the medium of communications and interchange, and together with ever increasing facilities for production and consumption, have generally contributed to the common good.

There is no doubt aerial communication might benefit the distribution of food, raw materials, and manufactured products, but whether such facilities are commensurate with present requirements remains questionable.

Malignant influences often outstrip permanent success and undermine the good results of an enterprise ; there is a period of thought and a period of action, and between the two may be a time of quiescence culminating in fulfilling the highest ideals.

Had more consideration been given twenty years ago to aerial communication, the awful calamity we are suffering from to-day might have been avoided.

Reciprocity by aerial communication is doubtless for the welfare of the world, but the wide view of life taken to-day by the whole of humanity has resulted in improved means of communication ; new communities have been formed, and increased facilities of production and consumption have resulted. These communities will again seek to spread out into the still more remote places of the earth, and in aircraft will be found a rapid and relatively simple means of communication, making this desire possible of attainment.

Mobility of matter, whether in things seen or unseen, gives rise to the generation of impulses tending to actuate unknown forces, at times often uncontrollable, and in liberating the powers of aerial communications shall we take advantage of such benefits for our own welfare, or will aerial communications dominate us in such a manner as to leave us worse than before ?

The storage of commodities may be improved or hindered by more rapid or direct communications ; prices and quantities may fluctuate to such a degree as to diminish their value.

In the old days belligerents localised their struggles until a decision was achieved ; later they fought at varying ranges and areas ; guns were introduced with ever-increasing power and range, and armour responding to both ; limits were soon reached that rendered the struggles rarer, and other methods made decisions more and more impossible owing to the vast areas of the fighting, and with the advent of aircraft I fear peace will be for many years impossible.

About 140 years ago some paper-bag makers filled a bag with heated air and rose into the air ; it was hailed as a great discovery that gravity had at last been overcome. A chemist of Edinburgh at the same time experimented with hydrogen with similar results, and early last century Sir George Cayley

pointed out that gravity might be overcome by machines heavier than air, and in 1840 Henson and Stringfellow made a machine to transport themselves. Some years later the great French engineer Giffard made a navigable balloon which in dead calm air was manœuvred for a few miles. Attempts in Europe and America led to the British achieving practical results, and our attempts at Farnborough, second to none, have given us substantial results, and now British pioneers lead and are still leading, on machines of their own design, construction and navigation.

It is evident that aerial communications must now take part in our international intelligence and relations, such as rules of the air, landing-places, customs and tariffs, sanitary measures, pioneering, sport, meteorology, will all now be influenced by the advent of aircraft, and politicians, engineers and financiers are seriously considering to-day the possibilities of the new highway.

Aerial communication will be governed by international regulations, such as Lloyd's, for the proper and safe navigation of the air ; although each nation will build aircraft after their own designs, main principles will govern the construction of all, and in the distribution of wealth or increased facilities for finance, aircraft will play an important part.

In the standardising of output from factories and mines, novel features present themselves in aerial navigation, obviating as it may frequent handling of goods consigned to many places on the same route, while coal may be used at the pit's mouth for the generation of power, light and heat, which may be radiated by wires or without wires. Aircraft must and will do a large proportion of the carrying trade of the world hitherto done by rail and water, and more directly ; for example, wheat and meat which must be moved from one country to another by sea, is now first carried to the rail, then to the ship, and back again from the ship to the rail, for final distribution by motor lorry or otherwise ; but by aircraft,



large or small quantities of grain or other commodities may be distributed by bushels or tons exactly and precisely where it is required. It is the same with minerals, mails and munitions. Whether it will be more politic to take the produce to the consumer or the consumer to the produce, there is no doubt an immense redistribution of humanity, industry and agriculture is at hand with the dawn of aerial navigation.

If it is necessary for the commodities of life such as food, etc., and fuel, to be stored, how much more needful that such storage may be vastly improved by the mobility of aircraft, in fact mobile storage is such a possibility for granaries and packing yards.

Considering the international or local air routes, many variable factors lead to much discussion of the means involved. Many mines, ranches and agricultural districts are inaccessible owing to the difficulties of approach, but by air such barriers are crossed with ease. Pioneering by aircraft has already been accomplished in several parts of the world ; some attempt has been made in clearing tangled forests by incendiary bombs, and the ground cleared by such means of vermin, brushwood and useless vegetation has been exploited for ranching and cattle raising.

Inaccessible mining properties have already been approached and small quantities of ore deposited on to ships ; inspectors and prospectors have approved of such communication between distant stations, and vast tracts of land in Siberia have already been inspected by such means of transit.

The problem of speed has already obtained greater value than by land or sea, and together with the uninterrupted bird's-eye view that can be obtained from aircraft, gives a useful result at small cost.

In meteorology aircraft can be most useful, for there are many problems that can be usefully solved by simultaneous observations from single units or a small number operating from a base ; temperature gradients, hygrometric values, the

study of atmospheric magnetism, may be successfully developed within a few years by the employment of our gallant meteorologists after the war is over, and the formation, thickness and distribution of fog which to-day causes such anxiety, may be reported in accordance with the regulations of the Meteorological Office, South Kensington.

While the soundings of the upper air have been carried out by the M.O. chiefly in northern latitudes, we shall be able shortly to carry out many important investigations in southern latitudes.

The Heat Belt is the chief prize in the struggle now begun ; much has to be done in what seems to have been, at least for a century, especially entrusted to the British Empire.

In the Heat Belt, owing to the facilities of living which has prevented the accumulation of a reserve of wealth (without which political progress is impossible), the inhabitants of the tropics are under no delusion—they have seen enough to realise the difference between extermination and scientific servitude.

# Portrait Gallery of the Royal Cornwall Polytechnic Society.

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- I. WILLIAM HENRY EDGCUMBE. 4TH EARL OF MOUNT  
EDGCUMBE, P.C., G.C.V.O., D.C.L., VICE-PRESIDENT,  
1875 ; PRESIDENT, 1883 TO 1885.

The family of Edgcumbe came originally from Eggecumbe or Edgcumbe in the parish of Milton Abbot on the Devon bank of the Tamar and about half-way between Launceston and Tavistock. The earliest recorded Edgcumbe is Richard, who was living in 1292 and died in 1323. His son, also Richard, had a second son William, who married Hilaria, daughter and heiress of William de Cotehele, and removed to Cotehele on the Cornish side of the river in 1353, since which time that property, with its beautiful manor-house, some of which is actually as early as that date, has belonged to the Edgcumbe family. Of his son William, and his grandson Peter, who married Elizabeth, daughter of Richard Holland, very little is recorded, but Richard the son and heir of Peter was a man of some distinction. He took the Lancastrian side in the Wars of the Roses, though he represented Tavistock in Parliament in the seventh year of Edward IV. Being involved in Buckingham's rising against Richard III, he had to fly for his life. Sir Henry Bodrugan pursued him to Cotehele and he narrowly escaped capture by throwing his cap with a stone in it into the river, thereby misleading his pursuers into thinking that he had sunk to the bottom, and giving up the chase. Later, when his side triumphed, he "took it out" of Bodrugan for

this, and pursued him to his own place in Gorran, where at Chapel Point the name of "Bodrigan's Leap" keeps up the memory of a still more risky escape, which may well have been suggested by Sir Tristan's feat at possibly the same place. Richard Edgecumbe escaped to Brittany, returned to England with Henry of Richmond, was knighted at Bosworth Field, and became Comptroller of the Household to Henry VII, Escheator of Cornwall, which may account for his getting the forfeited lands of Bodrigan granted to him, Constable of Launceston Castle and, in 1487, Sheriff of Devon. He died in 1489 at Morlaix, in Brittany, where his tomb is still to be seen in the desecrated Church of the Dominicans, now a museum and picture gallery. His son Piers, who died in 1539, married Joan, daughter and heiress of James Dernford or Durneford of Stonehouse and Rame, a marriage which brought broad lands to the family. This Piers was one of the twenty Knights of the Bath created with Arthur Prince of Wales on St. Andrew's Day, 1490. It was his son Richard, knighted in 1537, who built in 1550 the house of Mount Edgecumbe, on property which came from his mother. The place was formerly called "Vaultershome" or "Vaultersholme," which appears to be Valletort's Holme or Island. Later it was called West Stonehouse, and it was only when the house was built that it acquired its present name. Until comparatively modern times the "tithing" of Vaulterhome in Maker formed part of Devonshire, but was annexed to Cornwall for parliamentary purposes by the Reform Act of 1832, and finally made part of Cornwall by an Act 7 & 8 Vict. cap. 61. Richard Edgecumbe married one of the Tregians of Wolvedon (or Goldon) in Probus, whose brother Francis lost his lands and was imprisoned for twenty years for harbouring Cuthbert Mayne, the martyr. Richard died in 1562, and was succeeded by his son Piers, who married Margaret, daughter of Anthony Luttrell, a descendant of Thomas of Brotherton, son of Edward I. This "Royal descent" is noted in Colonel J. L. Vivian's pedigree

of the Edgcumbes, but he might have mentioned a very much better one from the Lady Anne Plantagenet, sister of Edward IV, which was brought in by the marriage of the 1st Earl of Mount Edgcumbe with Emma, daughter of Archbishop Gilbert of York. Piers was M.P. for Cornwall and died in 1607. His son, Sir Richard, knighted in 1603, was M.P. for Grampond and Bossinney and died in 1639, leaving a son Piers, who was M.P. for Newport and Camelford and died in 1666. The next was his son Sir Richard, who was made a Knight of the Bath at the coronation of Charles II, and died in 1688. His son Richard was M.P. for Cornwall, and was a Lord of the Treasury in 1716 and 1728, held several other high offices and was created Baron Edgcumbe in 1742. On his death in 1758 he was succeeded by his eldest son, Richard, who was M.P. for Plympton and for Penryn, a Lord Commissioner of the Admiralty, and Comptroller of the Household. He was also Lord Lieutenant of Cornwall. He died unmarried in 1761 and was succeeded by his brother George, Admiral of the Blue, and Lord Lieutenant of Cornwall. He was created Viscount Mount Edgcumbe and Valletort in 1781 and Earl of Mount Edgcumbe in 1789. He died in 1795. The 2nd Earl was his only son Richard, who was also an Admiral of the Blue and Lord Lieutenant of Cornwall. He died in 1839. His son Ernest Augustus, the 3rd Earl of Mount Edgcumbe, was Aide-de-Camp to Queen Victoria, and was Vice-Admiral of Cornwall from 1854 till his death in 1861. He married Caroline Augusta, daughter of Rear-Admiral Charles Fielding, by whom he had two sons, William Henry, the 4th Earl, and Ernest, who died in 1915, and a daughter, Lady Ernestine Edgcumbe, who is still living.

William Henry, 4th Earl of Mount Edgcumbe, was born in London on 5th November, 1832. He was educated at Harrow School and at Christ Church, Oxford, where he took his B.A. degree in 1856. In 1859 he was elected M.P. for Plymouth as a Conservative. At the previous election two



Liberal members, Robert Collier, afterwards Lord Monkswell, and James White, had been returned by very large majorities, and it was a considerable triumph that Lord Valletort, as he then was, should head the poll with a good majority over both these candidates. When on the death of his father in 1861 Viscount Valletort went to the House of Lords as Earl of Mount Edgecumbe, the seat went back to the Liberals. The new Earl, however, continued to take an important part in Conservative politics in Plymouth and Devonport, and was always a useful member of the House of Lords. But his time was very largely taken up with duties connected with positions in the Royal Household and with various local matters in Cornwall and Devon, so that his career could not be said to be to any great extent a political one, the only office which he held having been that of Lord Chamberlain during the last year of the Beaconsfield Ministry of 1874 to 1880. In his early years, and indeed to the end of his life, he was well known and greatly liked at the Court of Queen Victoria, and he, with Major Teesdale and Major Lloyd Lindsay (afterwards Lord Wantage), was chosen, as Equerry, to be a companion of the Prince of Wales (afterwards King Edward VII) as a young man, whom he accompanied on his foreign travels. In 1866 he was made an Extra Lord of the Bedchamber to the Prince of Wales, and from 1885 to 1892, except for a short interval in 1886, he was Lord Steward of the Household of Queen Victoria, and from 1887 to 1897 was an Aide-de-Camp to the Queen. In 1877 he was made Lord Lieutenant of Cornwall, and in 1897 Vice-Admiral of Cornwall, an office which had been in abeyance since his father's death. Both of these offices he held until his death. He was also a Deputy Lieutenant for Devon and a Special Deputy Warden of the Stannaries. In 1889 he was appointed a member of Council of the Duchy of Cornwall, and in 1907 Keeper of the Privy Seal to the Prince of Wales. He was also Brigadier-General of the Plymouth Volunteer Brigade from 1878 to 1882 and Honorary Colonel of the 2nd Prince of

Wales' Volunteer Battalion of the Devonshire Regiment. He took a great interest in all local affairs in Devon and Cornwall. When County Councils were first created he was made first Chairman of that of Cornwall, and he was for a long time Chairman of the Cornwall Quarter Sessions. He took a considerable part in the beginnings of volunteering in Cornwall and Devon, and raised a mounted company attached to the Devon Volunteer Battalion of the Devon Regiment. In Freemasonry he was very distinguished. He was initiated in the Westminster and Keystone Lodge (No. 10) in 1856, and joined the Sincerity Lodge of East Stonehouse (No. 189) in 1857, of which he became W.M. in 1858, and Provincial Grand Warden of Devon in the same year. After the death of Augustus Smith of Scilly in 1872 he was appointed Provincial Grand Master of Cornwall by the Marquis of Ripon, then Grand Master of England, and in 1891 he was appointed Deputy Grand Master of England, the Prince of Wales (King Edward VII) being then Grand Master. He presided at a special Grand Lodge of England convened at Truro on 20th May, 1880, for the laying of the foundation stone of Truro Cathedral by the then Prince of Wales. He became a Companion of the Royal Arch (Royal Cornubian Chapter, Truro, No. 331) in 1873, and in 1875 became Grand Superintendent of the Cornwall Provincial Grand Chapter. These high offices of Freemasonry he held for the rest of his life, and during all that time he took a leading and energetic part in Masonic charities.

In Cornish Societies he also took an important part. He was President of the Royal Institution in 1882 to 1884. For nearly sixty years he was a member of the Royal Cornwall Polytechnic Society, of which he was a Trustee, was elected a Vice-President in 1875 and was President in 1883 to 1885, and he was for a long time a constant attendant at the Exhibitions, in which he took a great interest. He was also a Vice-President of the Royal Geological Society of Cornwall.

In 1858 Lord Valletort, as he then was, married the Lady







THE REV. JOHN ROGERS, M.A.,  
Canon Residentiary of Exeter,  
Vice-President of the Royal Cornwall Polytechnic Society,  
1834.

Katharine Elizabeth Hamilton, daughter of James, Marquis (afterward Duke) of Abercorn. She died in 1874, leaving one son, Piers Alexander Hamilton, the present Earl of Mount Edgumbe, and three daughters, Lady Victoria Frederica Caroline, who married Lord Algernon Percy, second son of the 6th Duke of Northumberland, Lady Albertha Louisa Florence, who married Sir Henry Yarde Buller Lopes, Bart., M.P. for Grantham, and Lady Edith Hilaria, who married John Townsend St. Aubyn, 2nd Lord St. Levan. Lord Mount Edgumbe married in 1906 his cousin, Caroline Cecilia, daughter of the Hon. George Edgumbe and widow of Atholl Charles Liddell, 3rd Earl of Ravensworth. She died after a short illness in 1909. Lord Mount Edgumbe himself died at the Winter Villa, Stonehouse, on 25th September, 1917, in his eighty-fifth year.

II. THE REV. JOHN ROGERS, CANON OF EXETER,  
VICE-PRESIDENT, 1834.

The older pedigrees of the family of Rogers of Penrose conjecture an origin from the family of Rogers of Lanke in St. Breward. They assert that John Rogers of Truthwall in Crowan, who died in 1690, was probably a son of Thomas, third son of John Rogers of Lanke, who married a daughter of a Trewavas of Trewavas, in Breage. This Thomas was the great-grandson of John Rogers of Lanke, who was living in 1470, and grandson of Richard, who appears in the St. Breward Subsidy Roll of 1544. But the basis of this conjecture seems to be nothing more definite than the proximity of Breage and Crowan. There is nothing also to connect the Penrose family with that of Skewes, also in Crowan, which became noted by reason of the obstinate defence of the house by Henry Rogers against the Under-Sheriff and Posse Comitatus in 1734, a story which is told at great length by Davies Gilbert in his *Parochial History of Cornwall*, and with changed names forms the groundwork of a tale by Sir Arthur Quiller-Couch. Nor is there any evidence of any connection with another family

of Rogers of Helston, whose headquarters is now Nansloc, a very short way from Penrose. The late Mr. John Jope Rogers of Penrose, a very distinguished antiquary, told Colonel J. L. Vivian, who recorded the fact in his book of Cornish pedigrees, that he had good reason to believe that his family came from Dorsetshire in the seventeenth century. It would seem, therefore, that the earliest certain ancestor is the afore-said John of Truthwall. He had a son John, who was of Treassow in Ludgvan and died in 1725. He married Thomasine, daughter of Hugh Bawden of Goodern, King Teudar's old fortress, in St. Kea. His younger son and eventual heir John, who died in 1758, married his cousin, Aurelia, daughter and eventual heiress of another Hugh Bawden of Goodern, and had a son Hugh, who was an Alderman of Helston and was Sheriff of Cornwall in 1770. He married Anne, daughter of James Bishop, of Lower Trekenning in St. Columb, and died in 1773, leaving a son John, who was the father of the subject of this notice. He married Margaret, daughter of Francis Basset of Tehidy, by whom he had six sons and thirteen daughters. Her mother was Margaret, daughter of Sir John St. Aubyn of Clowance, 3rd Baronet. It was Hugh who purchased Penrose from the heiress of the family of Penrose, Grace, wife of Alexander Cumming of Altyn in Scotland, and daughter of Bridget, daughter of John Penrose of Penrose, who married William Pearse of Penryn.

Canon John Rogers was born at Plymouth on July 17th, 1778. He was educated first at Helston Grammar School and later at Eton, whence he matriculated at Trinity College, Oxford, on 8th April, 1797. He took his B.A. degree in 1801 and his M.A. in 1810. He was ordained to the curacy of St. Blazey, and in 1807 was presented by his father to the Rectory of Mawnan, which he held till 1838. In 1820 he was made a Canon Residentiary of Exeter. On the death of his father in 1832 he succeeded to the Penrose, Helston and other estates of the family and resided for the rest of his life at

Penrose. He married first Mary, daughter of the Rev. John Jope, Rector of St. Ive and Vicar of St. Cleer, by whom he had five sons and one daughter, and secondly Grace, eldest daughter of G. S. Fursdon of Fursdon, Devon. He died at Penrose on 12th June, 1856, and was buried at Sithney.

As a landlord Canon Rogers was very energetic and extremely popular with his tenants. He was an excellent botanist and mineralogist, and as lord of Tresavean Mine he took part in forwarding the adoption of the first man-engine, which, it will be remembered, was the result of prizes offered through the Royal Cornwall Polytechnic Society by Charles Fox in 1834, and was first tried in 1842, the plan of the first prize-winner, Michael Loam, of the Consolidated Mines, having been adopted. Canon Rogers contributed several papers on geology to the *Transactions of the Royal Geological Society of Cornwall*, the *Bulletin Universel des Sciences* and other publications, and on archæology to the *Report of the Royal Institution of Cornwall*, the *Transactions of the Exeter Diocesan Architectural Society* and the *Archæological Journal*. But his chief claim to fame is as a Hebrew and Syriac scholar. In 1812 he supervised the work of Frey's edition of the Hebrew Bible, he published in 1833-4 an edition of the Book of Psalms in Hebrew, metrically arranged, and from time to time appeared short works of his on textual criticism of the Old Testament. His religious and theological publications belong for the most part to bygone controversy, but the following works of his are worthy of mention :—

*Remarks on the principles adopted by Bishop Louth in correcting the text of the Hebrew Bible.* Oxford, 1832.

*The Book of Psalms in Hebrew*, metrically arranged. Oxford, 1833-34. 2 vols.

*Reasons why a new edition of the Peschito or ancient Syriac version of the Old Testament should be published.* Oxford, 1849.

- “Remarks on the *Variæ Lectiones* of the Hebrew Bible.”  
*Journal of Sacred Literature*, 1856.
- “Account of two stones discovered at Castle-an-Dinas.”  
*Gentleman's Magazine*, 1802.
- “Some account of the opening of a barrow near New-quay, with a few remarks on urn burial.” *Report R.I.C.*, 1840.
- “On a monumental slab discovered in St. Breock Church.” *Report R.I.C.*, 1845.
- “Notice of a Norman font discovered in the Church of St. Bartholomew, Sithney.” *Transactions of the Exeter Diocesan Architectural Society*, 1853.
- “Inscribed Roman Tablet at St. Hilary.” *Archæological Journal*, 1855.
- “Vegetable remains in the basin at Porthleven.” *Transactions of the Royal Geological Society of Cornwall*, 1818.
- “Observations on the limestones of Veryan and the neighbouring parishes.” *Transactions R.G.S.C.*, 1818.
- “Observations on the hornblende formation in the parish of St. Cleer.” *Bulletin Universel des Sciences, Ferussac* I, p. 214 (1824).
- “Observations on the Serpentine district of Cornwall.” *Bull. Univ. des Sciences, Ferussac* II, pp. 416–23.
- “Notice of wood and peat found below high-water mark on the beach at Mainporth in Cornwall.” *Bull. Univ. des Sciences, Ferussac* IV, pp. 481–83 (1832).
- “Notice of the Serpentine of Pennare.” *Bull. Univ. des Sciences, Ferussac* VI, pp. 41–42 (1846).

Canon Rogers's eldest son John Jope Rogers succeeded him at Penrose in 1856. He represented Helston in Parliament







RICHARD TAYLOR, F.G.S.,  
President of the Royal Cornwall Polytechnic Society,  
1877 to 1879.

from 1859 to 1865, and was a Vice-President of the Polytechnic Society in 1857. Another son, the Rev. Canon Saltren Rogers, was President of the Society in 1880 to 1882. Of Canon John Rogers's forty grandchildren a very considerable number have been and are members of the Society.

III. RICHARD TAYLOR, F.G.S., PRESIDENT, 1877 TO 1879 ;  
HONORARY SECRETARY, 1833 TO 1870 ; VICE-PRESIDENT,  
1849.

Richard Taylor was the second son of John Taylor, F.R.S., who was one of the original Vice-Presidents of the Royal Cornwall Polytechnic Society at its foundation in 1833. An account of the latter and of his ancestry has already appeared in the Report of the Society for 1915, so it is unnecessary to repeat what is said there. Richard Taylor's mother was Anne Rowe, daughter of Daniel Pringle of Iveden, near Honiton. He was born at Holwell, near Tavistock, on March 4th, 1810. He and his elder brother, John, were both educated at Charterhouse School and at the Manchester College at York, and, after studying practical mining in the mines under their father's management in England, they went to Germany in 1828 and visited the principal mines in the Rhineland and the Hartz Mountains, at Freiberg in Saxony, and in Hungary, South Austria and Bavaria. After his return from Germany Richard Taylor settled in Cornwall, where, under his father, he took the management of the Consolidated Mines, the United Mines, and others. He was also appointed mineral agent to the Duchy of Cornwall. When Queen Victoria and Prince Albert visited Cornwall in 1846, at the special request of the latter he acted as their guide, and personally conducted them over the Restormel Royal Iron Mines. He is mentioned in *Leaves from My Diary in the Highlands*, which contains an account of the Royal Tour in Cornwall. In it Queen Victoria says :—

“September 6th. We have on board with us, since we left

Falmouth, Mr. Taylor, mineral agent to the Duchy of Cornwall, a very intelligent young man, married to a niece of Sir Charles Lemon's."

"September 8th. We visited the Restormel Mine belonging to the Duchy of Cornwall. It is an iron mine, and you go in on a level. Albert and I got into one of the trucks, and were dragged in by miners, Mr. Taylor walking behind us. [Then follows a description of the mine at some length.] Mr. Taylor deserves the greatest credit for all the arrangements. He and his father are what are called 'Adventurers' of the mine."

In 1851 Richard Taylor left Cornwall and went to London, where he became a partner with his father and brother in the firm of John Taylor and Sons, mining engineers. He took an active part in the various companies with which the firm was connected, and his greatest success was with the Pontgibaud Mining and Smelting Company in the south of France, of which he was engineer-in-chief at the time of his death. He rescued this company from a very precarious position and transformed it into a paying concern. He also had a large share in the formation of the Coueron Smelting Works and Rolling Mills on the Loire, which were later taken over by the Pontgibaud Company.

When the Royal Cornwall Polytechnic Society was founded in 1833, Richard Taylor was appointed first Honorary Secretary and he continued to hold that office, at first alone and later in conjunction with Lieut. J. S. Jago, R.N., Dr. R. C. Vigurs and others, for no less than thirty-seven years, resigning it in 1870. He does not appear to have contributed any papers, except his Presidential Addresses, to the Reports, and there is only one suggestion of his (that the mining interest of the county should be invited to furnish copies of plans, sections and underground workings, etc.) recorded in Mr. Wilson Fox's Historical Synopsis of the Society. Indeed, his only literary effort appears to have been a very short

paper on "The Relative position of the Yellow and Vitreous Sulphurets of Copper in the Lode of Pembroke Mine," printed in the *Transactions of the Royal Geological Society of Cornwall*, Vol. VI., pp. 99, 100. But the work of an Honorary Secretary is not of a sort which appears prominently under his own name, and he certainly took a very large part during those thirty-seven years in the organisation and active work of the Society, especially in matters connected with mining, for which he was very highly qualified. He was elected a Vice-President in 1849 and President in 1877. He took an important part in the founding of the Miners' Association of Cornwall, of which he was at one time President.

He died from an attack of bronchitis, after a few days' illness, at his house, 6 Gledhow Gardens, Brompton, on December 28th, 1883, and was buried in the Brompton Cemetery.



REPORT

OF THE

Observatory Committee

OF THE

Royal Cornwall Polytechnic Society

WITH

METEOROLOGICAL TABLES

AND

Tables of Sea Temperature,

FOR THE YEAR 1917,

BY

WILSON LLOYD FOX, F.R. Met. Soc.

*(Hon. Sec. Observatory Committee),*

AND

JOSHUA BATH PHILLIPS, F.R. Met. Soc.,

*Of the Meteorological Office Weather Station, Falmouth.*

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FALMOUTH :

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—  
1918.





REPORT  
OF THE  
OBSERVATORY COMMITTEE  
OF THE  
ROYAL CORNWALL POLYTECHNIC  
SOCIETY  
FOR THE YEAR 1917.

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COMMITTEE :—

Mr. H. DYKE ACLAND,  
F.G.S., F.S.A.

Capt. ARTHUR ROGERS,  
R.N.R., J.P.

Mr. HOWARD FOX, F.G.S.

Mr. WILSON LLOYD FOX,

Major LUARD, R.E.

F.R. Met. Soc., J.P., *Hon. Sec.*

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The Observatory premises and garden have been maintained in a satisfactory condition during the year.

The annual payment of £30, together with the additional sum of £30 2s. 10d. has been received from the Meteorological Office to meet the cost of maintenance of the Observatory for the year ending 30th June, 1917.

Mr. Patrick Y. Alexander, from the Meteorological Office, has had the use of the sitting room since the 28th February,

with the exception of eighteen days in August, when Lieutenant T. Harris, M.A., A.R.C.Sc., R.E. (Professional Assistant at the Meteorological Office), and his wife and child were in residence.

The annual account of the Treasurer, Mr. W. W. J. Sharpe, has been audited by Messrs. H. B. Carlyon and E. P. Kestin, to whom the Committee tender their thanks.

The Honorary Secretary has presented copies of the late Luke Howard's books, entitled "The Cycle of the Seasons of Britain" and "Modifications of Clouds" to the Kew Observatory, as its library was without them. He has also given to the Falmouth Observatory Library, Luke Howard's "Climate of London" in three volumes, 2nd edition, 1833, and bound "Magnetic Observations, 1905," by Dr. L. A. Bauer, of the Carnegie Institute of Washington.

The taking of Sea Temperatures has been continued by Captain W. J. Andrew of the tug "New Resolute" under the same conditions as last year, viz., principally about the centre of the Harbour. A table of results, prepared by your Honorary Secretary, will be published as usual in the Annual Report, together with tables of Temperature, Humidity, Pressure, Cloud, Bright Sunshine, Wind and Rainfall, prepared by Mr. J. B. Phillips, F.R. Met. Soc. (Staff Clerk at the Observatory), through the courtesy of the Meteorological Office. It is to be hoped that the day is not far distant when the publication of meteorological data in the press may be resumed.

FALMOUTH MAGNETOGRAPHS.—In pursuance of an arrangement with the Director of the Meteorological Office, in April last, and with the sanction of the Royal Society, the books containing the standard magnetic observations of Vibration and Deflection and of Declination and Vertical Force, from October, 1886, to June, 1913, inclusive, together with the photographic magnetograph curves of Horizontal Force, Vertical Force and Declination for the same period, have been

forwarded to Kew Observatory to be retained there for greater facility of reference. During November the instruments were dismantled. The more delicate parts were taken away by Dr. Arthur W. Mitchell (Superintendent of Eskdalemuir Observatory), the remaining portions being forwarded to that Observatory a few days later. This was done at the instigation of the Gassiot Committee of the Royal Society, which recommended that permission should be given to the Meteorological Committee for the use of the instruments at Eskdalemuir for one year.

WILSON LLOYD FOX,

*Hon. Sec.*

## METEOROLOGICAL NOTES, 1917.

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**PRESSURE.**—The mean was 1016·1 mb. (30·007 mercury-inches), being 0·3 mb. (0·29 in.) above the normal. The maximum, 1039·2 mb. (30·688 ins.), was reached on the 16th March, which is the highest reading since the 20th November, 1915, with 1040·5 mb. (30·726 ins.). The minimum, 970·0 mb. (28·645 ins.), which is unusually high, was recorded on the 27th August. The next previous highest was that of the 29th October, 1913, viz., 980 mb. (28·94 ins.). It is the only time that the minimum pressure has occurred in the month of August at the Observatory. The months in which the minimum for the year has not been registered are May, June and July.

**TEMPERATURE.**—The mean was 49°·4, which is the lowest since the Climatological Station was started in 1882. This is accounted for when the deficiency of the mean temperature of the several months following is considered. The nearest approach was in 1888 when it was 50°·2. The mean for January was 38°·6, being the coldest recorded for that month since the same year, with the exception of 37°·9 in 1895. It contrasts with the temperature of 47°·8 in the previous January, 1916. February, with 38°·4 was even colder, yet that was exceeded on two previous occasions, viz., in the same year, 1895, when it was 34°·4 and in 1888 when 37°·4 were registered. The remarkable coldness of these two months call for additional notice. From the 14th of January to the 3rd of February inclusive, a period of 18 days, the maximum temperature only once reached 40°, viz., on the 18th, when it was 44°—a remarkable, and in all probability unprecedented, circumstance in this district. The minimum for January was registered on the 17th, being 25°. The mean temperature of February,

38°·4, was 5° below the average of the last 45 years. The minimum being 24°·0 on the 6th. Swanpool became frozen over and skating was indulged in for several days at the southern end. The long-continued frosty weather caused great destruction of bird life. The gardens and fields around Falmouth were frequented by Lapwing and Golden Plovers, Gulls, and various species of smaller birds, and many of these were to be picked up dead in different directions. Unusual cold was also experienced in March and April. The latter month was the coldest for 36 years, and 3°·7 below the average of the last 45 years: the mean temperature was 43°·8 and the next lowest was 45°·7 in 1888. The absolute minimum was 29°·2. The low mean temperature of August—59°·6—has only twice been exceeded, viz., in 1891 and 1892 with 59°·5 and 56°·8 respectively. October's mean temperature gave a similar result, *i.e.*, on only two occasions has it been lower, viz., 49°·1 in 1892 and 48°·9 in 1896. December with 40°·3 (4°·7 below the average) would be a record, but for 39°·3 in 1890.

RAINFALL.—The total, 36·21 inches, was 9·58 below the average of the 45 years, 1871—1915. As is generally the case, the rainfall of the first six months was considerably less than that of the last, being 15·07 inches as compared with 21·14 inches. The latest year which had a less fall in the first six months was that of the Diamond Jubilee, 1897, which had 13·36 inches. August with 6·25, however, had an excess of 2·83 over the mean. October with 7·4 (the heaviest monthly fall of the year) was 4 above the average. The driest month, February, had 1·18 inches. The December fall—1·83—was a minimum record for that month. In contrast to this the rain in December, 1915, measured 11·14 inches. This record fall was attributed by some to the heavy firing at the Front. Against it may be quoted the 10·7 inches of 1896, when no such suppositious cause existed, and the above-mentioned minimum record of 1·83 in 1917. There were 177 rainy days throughout the year: the month with the greatest number was October, with 27, whilst January had the least, viz., 12 only, which jointly with 1898 is a record for that

month. December had only 12 also, being 1 in excess of the number in 1899.

**BRIGHT SUNSHINE.**—The total number of hours was 1632·2. This is 132·1 less than the mean of the 35 years, 1881 to 1915. The daily mean was 4·47 hours. The brightest month was June, which had a daily average of 7·3 hours. January was the least sunny, with a daily mean of 1·5 hours.

**WIND.**—The Monthly Weather Report of the Meteorological Office states that “from the 15th of January until the end of the month the United Kingdom was on the margin of an anticyclone, centred at first over Scandinavia and moving gradually westward. . . . The gradient for southerly to easterly winds was rather steep on the 25th and 26th. South-easterly to easterly gales, commencing in Ireland, subsequently extended to the S.W. of England and the English Channel.” Strong winds and gales from a more or less easterly direction were experienced, with but slight exceptions, from the 20th of January until the 17th of February inclusive. On the 27th January an easterly gale, which attained an average velocity of 65 miles per hour, lasted from 3 a.m. until 8 p.m. The highest gust at Pendennis Castle was recorded at 35 minutes after noon, and was at the rate of 37 m/s or 83 miles per hour. It was this easterly gale, occurring near spring tides which, on the 27th, made a breach in the middle of the memorable s.s. “Ponus” which was stranded slightly to the south of Gyllyngvase beach on 3rd November, 1916, and where she has remained ever since, notwithstanding repeated efforts to get her off. The damage done by this gale around the southern shores of Devon and Cornwall was very extensive. Hallsands Village, near Start Point, was almost demolished, and the breakwater at Brixham suffered considerably, as did also the eastern breakwater at the Falmouth Docks. In this neighbourhood the height to which the waves washed the cliffs was, so far as is known, unprecedented. The damage caused thereby was naturally great. The large granite coping blocks (some 12 feet long) of



the pier in front of the Falmouth Hotel were strewn about. The bottom tiers of steps of the staircases leading to the beaches between the Falmouth Hotel and Gyllyngvase were carried away in several instances. The Queen Mary Garden was flooded at its western end and large quantities of sand and gravel were washed into it. At the S.W. end of the Swanpool beach the seas broke into Swanpool and completed the destruction of the road there. The big granite boulders were scattered in all directions, and many tons of sand filled up portions of the remaining road, besides much being washed into the pool at that end. The local press at the time contained many additional details of the damage sustained ashore and afloat at Falmouth. The road leading to Durgan on the Helford River was almost entirely carried away at a point near its bottom end, and the quays in front of the reading-room and two cottages adjoining the beach were almost destroyed. Thousands of shellfish, principally of the species *Pectunculus Glycimeris* or Dog Cockle, were strewn along the coastline of the Bay, whilst hundreds of gulls frequenting the beaches were for days a picturesque sight—some on the rocks and others on the waves—continually rising and flying to different positions, intent on feeding on the wealth of marine food which the very heavy seas had torn for them from the Channel bed.



## FALMOUTH SEA TEMPERATURES.

The Observations have been made by Captain Andrew, of the tug "New Resolute," near the centre of the Harbour during 1917. The differences from the Air Temperatures are taken from the mean of the daily maximum and minimum readings, from thermometers divided on the stem and verified and placed in a Stevenson Screen, at a height of four feet over grass at the Falmouth Observatory.

1917.	Number of Daily Observations.	Means.	Difference from Air.	Absolute Maximum.	Difference from Air.	Absolute Minimum.	Difference from Air.	Monthly Range.	Difference from Air.	Means for 36 years, 1872 to 1885 and 1894 to 1915
		°	°	°	°	°	°	°	°	°
January	21	46·5	+7·9	50·5	-2·3	40·0	+15·0	10·5	-17·3	48·1
February	22	41·9	+3·5	44·0	-9·2	40·0	+16·0	4·0	-25·2	47·1
March ..	21	44·3	+2·2	45·0	-9·4	42·5	+15·7	2·5	-25·1	47·4
April ....	24	47·1	+3·3	52·0	-8·2	43·5	+14·3	8·5	-22·5	48·9
May ....	23	54·0	+0·2	57·0	-12·1	52·0	+3·0	5·0	-21·1	52·1
June ....	26	59·4	+1·5	61·0	-13·4	56·0	+10·1	5·0	-23·5	55·6
July ....	25	61·8	+0·9	64·0	-7·2	59·0	+13·2	5·0	-20·4	58·3
August ..	26	61·7	+2·1	64·0	-9·1	58·0	+8·0	6·0	-17·1	59·7
September	25	59·6	+2·0	60·5	-9·1	58·5	+12·3	2·0	-21·4	59·0
October ..	22	57·4	+8·2	61·0	-2·0	54·0	+19·0	7·0	-21·0	56·9
November	24	52·8	+3·7	54·0	-3·0	51·0	+12·0	3·0	-15·0	53·4
December	25	47·8	+7·5	51·0	-2·4	44·0	+19·0	7·0	-21·4	50·2
Means ..	24	52·9	+3·6	55·3	-5·2	49·9	+13·6	5·5	-20·9	53·1

### Additional Sea Temperatures during 1917.

1917.	Place of Observation.	Temperature.	1917.	Place of Observation.	Temperature.
		°			°
January 4	Moorings .. ..	49·5	April 11	Moorings .. ..	43·0
" 9	ditto .. ..	48·0	May 8	*Quayside .. ..	54·0
" 22	ditto .. ..	43·0	" 9	ditto .. ..	52·5
" 24	ditto .. ..	44·0	" 11	Off Lighthouse .	54·0
" 26	ditto .. ..	43·0	" 23	Moorings .. ..	55·0
" 27	ditto .. ..	42·0	July 23	ditto .. ..	62·0
February 17	ditto .. ..	42·0	August 18	ditto .. ..	63·0
" 22	ditto .. ..	43·0	October 23	*Quayside .. ..	54·5
March 10	ditto .. ..	44·5	" 25	ditto .. ..	54·0
" 19	ditto .. ..	46·0	" 27	ditto .. ..	53·0
" 21	ditto .. ..	44·0	" 29	ditto .. ..	54·0
" 22	ditto .. ..	43·0	" 31	ditto .. ..	51·0
" 23	ditto .. ..	43·0	November 16	ditto .. ..	52·5
" 24	ditto .. ..	43·0	" 26	*Off Quay .. ..	51·0

\* N.B.—Custom House Quay.

# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Mean and Extreme Pressure of the Air, Mean Amount of Cloud at 7 a.m., 1 p.m. and 6 p.m., and NUMBER OF HOURS OF BRIGHT SUNSHINE at FALMOUTH OBSERVATORY during 1917.

DATE.	PRESSURE OF AIR.										CLOUD, 0-10.			BRIGHT SUNSHINE.					
	Mean pressure of the Air, in millibars.	Absolute Maximum, in millibars.	Date of Maximum.	Absolute Minimum, in millibars.	Date of Minimum.	Monthly Range, in millibars.	Mean elastic force of Vapour, in millibars.	7 a.m.			1 p.m.			Number of days on which Bright Sunshine occurred.	Percentage of Possible Duration.	Mean number of hours of Bright Sunshine for 35 years, 1881-1915.	Mean number of days on which Bright Sunshine occurred in 35 years, 1881-1915.		
								I.	II.	III.									
January..	1013.8	1030.7	1	991.3	8	39.4	6.7	7.7	7.4	7.4			19	18	57.6	20			
February	1020.1	1032.5	27	1007.2	20	25.3	6.9	6.6	7.2	5.6			19	25	84.1	21			
March	1011.0	1039.2	16	982.6	6	56.6	7.6	6.4	6.5	4.4			27	39	138.1	26			
April	1015.9	1035.5	26	987.3	2	48.2	7.8	4.8	5.1	3.0			30	57	184.4	27			
May	1014.4	1026.7	2	997.4	18	29.3	11.9	6.4	5.1	4.9			31	42	230.9	29			
June	1017.1	1026.7	30	999.8	20	26.9	13.7	5.8	5.8	4.3			29	45	222.9	28			
July	1018.6	1027.1	5	1006.2	8	20.8	15.2	6.1	6.5	5.9			28	39	224.2	29			
August	1068.4	1018.6	20	970.0	27	48.6	14.9	4.7	6.8	5.6			30	41	211.8	30			
September	1019.2	1030.0	29	1007.2	18	22.8	14.7	6.9	7.0	5.8			26	32	163.4	27			
October	1011.0	1027.9	22	982.1	13	45.8	10.3	6.5	6.8	6.5			27	32	116.1	26			
November	1023.2	1038.3	18	1000.6	9	37.7	11.0	8.2	8.1	8.4			18	14	75.8	22			
December	1024.1	1037.3	3	987.8	16	49.5	7.3	6.0	6.7	4.5			26	29	55.0	20			
Totals or Means	*1016.1					37.6	10.7	6.3	6.6	5.5			310	34	1764.3	305			

\* The readings of the Barometer are in millibars (1 mercury inch = 33.8633 millibars), and have been reduced to 32° F. at mean sea level and latitude 45°, and corrected for index error and capillarity. The mean monthly values are based on readings at 7 a.m., 1 p.m. and 6 p.m. The extreme Maxima and Minima of barometric pressure are standardised barograph readings. The records of bright sunshine are from the Campbell-Stokes Sunshine Recorder. The results are published by permission of the Meteorological Office, London. † = 30.688 mercury inches. ‡ = 50.007 mercury inches. § = 28.645 mercury inches.

# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.  
 Table of Mean and Extreme TEMPERATURE OF THE AIR and of HYGROMETRIC CONDITION at Falmouth Observatory for 1917.

DATE.		TEMPERATURE OF AIR.										HYGROMETRIC CONDITION.									
		Mean of daily Maximum and Minimum.	Mean of daily Maxima.	Mean of daily Minima.	Mean daily range.	Absolute Maximum.	Date of Maximum.	Absolute Minimum.	Date of Minimum.	Monthly range.	Dry Bulb.			Depression of Wet.			Humidity. Complete Saturation = 100.				
											I.	II.	III.	I.	II.	III.	I.	II.	III.		
1917.		7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	Means	
January ..	..	38.6	41.7	35.4	6.3	52.8	1	25.0	17	27.8	38.1	39.8	38.3	0	1.9	2.6	1.9	83	79	83	82
February ..	..	38.4	43.8	32.9	10.9	53.2	20	24.0	6	29.2	36.2	42.0	39.5	1.1	2.9	2.1	1.8	78	81	82	82
March ..	..	42.1	48.1	36.2	11.9	54.4	9	26.8	9	27.6	39.5	46.2	42.9	1.6	3.8	2.5	85	74	81	80	
April ..	..	43.8	50.8	38.7	14.1	60.2	25	29.2	2.5	31.0	40.6	48.8	46.1	1.6	5.1	4.1	87	67	72	75	
May ..	..	53.8	59.5	48.0	11.5	69.1	5	43.0	9	26.1	52.0	57.4	55.7	2.1	4.1	3.5	87	77	79	81	
June ..	..	57.9	64.3	51.4	12.9	74.4	11	45.9	9	28.5	57.1	62.4	60.6	2.4	4.8	4.3	85	74	76	78	
July ..	..	60.9	66.6	55.2	11.4	71.2	24	45.8	1	25.4	59.3	64.9	62.3	1.9	4.7	3.5	88	75	80	81	
August ..	..	59.6	65.1	54.1	11.0	73.1	6	50.0	1, 21	23.1	57.9	63.3	61.1	1.5	4.2	2.9	91	77	83	84	
September ..	..	57.6	63.0	52.2	10.8	69.6	11	46.2	27, 28	23.4	55.2	61.3	58.0	0.7	3.0	1.7	96	83	89	89	
October ..	..	49.2	54.8	43.5	11.3	63.0	1	35.0	28, 29	28.0	47.2	52.6	49.7	1.4	3.5	2.0	90	78	87	85	
November ..	..	49.1	52.9	45.3	7.6	57.0	1	39.0	27	18.0	48.4	61.5	49.7	1.3	2.0	1.3	90	86	91	89	
December ..	..	40.3	45.2	35.3	9.9	53.4	7	25.0	19	28.4	39.8	43.6	40.0	1.6	3.1	2.1	86	78	83	82	
Means ..	..	49.4	54.7	43.9	10.8					26.2	47.6	52.8	50.3	1.6	3.7	2.7	88	77	82	82	

The data are from Thermometers divided on the stem and verified and placed in a Stevenson Screen at a height of 4 feet over grass. The mean values in columns marked I., II., III. are based on readings at 7 a.m., 1 p.m. and 6 p.m. The results are published by permission of the Meteorological Office, London.

# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

RELATIVE MONTHLY NUMBER OF DAYS OF WIND from the Four Cardinal Points of the Compass; Mean and Extreme VELOCITY OF WIND in metres per second, and Monthly and Yearly RAINFALL at FALMOUTH OBSERVATORY for 1917.

DATE.		WIND.							RAIN.						
		Relative proportion of				Mean velocity in metres per second.	Maximum velocity during one hour.	Date and hour of Maximum velocity.	Direction of Maximum velocity.	Rain.	Mean for 45 years, 1871—1916.	Greatest amount in one day.	Date.	No of rainy days.	Mean No. of rainy days for 45 years, 1871—1916.
		N	E	S	W										
January	.. .. .	13	10	2	6	4.6	11.8	7th, 8 p.m.	W	71.7	118.4	23.5	7	12	20
February	.. .. .	12	8	3	5	2.8	6.9	5th, 9, 10, 12 a.m.	N	30.0	98.6	18.2	20	9	17
March	.. .. .	11	3	7	10	4.0	11.5	20th, 10 a.m.	W N W	105.7	89.2	18.5	4	18	18
April	.. .. .	14	2	3	11	3.9	12.5	11th, 5 p.m.	W N W	45.8	71.1	9.3	11	15	16
May	.. .. .	6	12	8	5	2.6	7.9	23rd, 11 p.m.	S S W	52.3	57.7	16.6	26	9	13
June	.. .. .	9	4	8	9	2.4	7.5	{ 2nd, 1 to 3 p.m. 20th, 1 p.m.	W S W	77.1	62.0	20.7	27	12	11
July	.. .. .	7	6	8	10	2.6	10.8	18th, noon	S W	33.2	77.0	10.6	17	10	16
August	.. .. .	5	1	9	16	4.0	10.8	28th, 5 a.m.	W N W	158.7	86.9	33.0	27	23	16
September	.. .. .	6	3	9	12	2.6	10.2	18th, 8 p.m.	S S W	54.8	84.3	14.2	17	15	16
October	.. .. .	7	1	5	18	4.3	13.4	24th, 11 p.m.	W S W	187.7	182.1	23.2	12	27	20
November	.. .. .	7	1	5	17	4.0	12.1	25th, 6 a.m.	N W	55.5	129.5	14.6	3	15	19
December	.. .. .	15	6	4	6	3.7	11.3	16th, 1 p.m.	W N W	46.6	155.5	15.3	8	12	22
Totals or Means .. .. .		112	57	71	125	3.5				\$919.1	\$1162.3			177	207

The direction and velocity of the wind are obtained from the continuous curves of the self-recording Robinson Anemometer, the cups of which are 43 feet above the ground; the velocity is given in metres per second (1 mile per hour = 0.44704 metres p.r second). The Rainfall is given in millimetres (1 in. = 25.4 millimetres) and is from the 11 inch self-recording Beckley Gauge, 2 feet above the ground. The number of Rainy Days is that on which 0.25 mm. (0.01 in.) or more, of rain was recorded. The Wind and Rainfall values are derived from the daily continuous records midlight to midnight. The results are published by permission of the Meteorological Office, London.  $\uparrow$  10 miles per hour.  $\uparrow$  36.21 inches.  $\uparrow$  45.79 inches.  $\parallel$  1.30 inches.

METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE, 5° 5' W. Height, 167 feet above mean sea level.

Monthly Totals of HOURLY VALUES of BRIGHT SUNSHINE at Falmouth Observatory during 1917.

1917.	4	5	6	7	8	9	10	11	noon.	1	2	3	4	5	6	7	8	Total.
January..	..	..	..	..	..	0.1	3.3	5.8	8.2	8.4	8.7	7.2	5.6	..	..	..	..	47.9
February	..	..	..	..	..	0.2	4.1	6.9	10.7	9.2	8.5	9.9	7.1	0.2	..	..	..	71.2
March ..	..	..	..	..	..	0.3	6.5	9.7	12.1	13.8	15.8	16.6	15.1	8.2	0.2	..	..	148.7
April ..	..	..	..	..	..	0.2	7.5	14.5	18.1	20.1	20.9	22.5	22.0	19.8	19.8	14.4	..	256.1
May ..	..	..	..	..	..	1.5	6.7	11.5	12.6	14.5	13.9	17.9	17.2	18.7	18.8	4.1	..	198.8
June ..	..	..	..	..	..	7.7	12.2	13.2	12.2	14.2	15.5	14.8	15.4	17.8	18.0	10.2	0.3	218.9
July ..	..	..	..	..	..	2.7	9.3	13.0	13.5	15.7	16.8	14.0	17.6	16.3	17.6	6.1	..	193.0
August ..	..	..	..	..	..	1.3	12.6	16.0	16.6	16.5	16.6	15.1	16.0	13.3	15.5	0.8	..	184.2
September	..	..	..	..	..	..	1.3	8.0	8.8	10.4	11.8	12.6	11.8	11.8	12.1	..	..	121.9
October ..	..	..	..	..	..	..	..	1.4	8.9	11.4	11.7	10.9	12.0	12.9	13.7	..	..	108.9
November	..	..	..	..	..	..	..	..	0.8	3.8	4.5	5.7	5.9	5.5	6.3	..	..	38.4
December	..	..	..	..	..	..	..	..	0.1	7.1	11.2	14.4	13.7	9.5	10.0	..	..	72.3
Total ..	0.7	13.4	49.9	84.3	105.5	135.5	153.5	162.1	165.8	168.5	168.3	144.2	117.2	91.4	62.1	22.6	0.3	1632.8

The records of Bright Ennshine are from the Campbell-Stokes Sunshine Recorder. The instruments in use are the property of the Meteorological Office, London, by whose permission the results are published.



# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Monthly totals of the HOURLY VALUES OF RAINFALL, from the continuous records of the Beckley Rain Gauge at Falmouth Observatory for 1917.

1917.	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Mid.	Total.
January..	6.4	3.9	1.6	1.1	0.6	0.9	0.4	1.7	0.9	—	0.4	1.1	2.3	5.1	5.9	2.1	0.9	5.0	3.1	8.7	4.5	4.8	6.1	4.2	71.7
February	3.5	2.1	2.0	2.2	4.5	1.6	1.0	0.3	0.2	0.4	0.4	0.4	1.6	1.5	3.8	1.6	0.8	0.2	0.2	0.3	0.1	0.4	0.5	0.4	30.0
March	2.7	5.0	2.9	6.5	7.7	4.8	2.4	5.7	7.3	3.9	2.9	5.9	6.2	4.8	5.8	7.6	7.5	1.0	2.7	1.3	1.4	1.1	3.2	5.4	105.7
April	1.9	1.4	3.9	2.6	2.2	2.0	1.8	2.1	3.8	1.8	1.7	0.8	2.7	1.0	0.9	1.7	0.4	0.2	0.3	0.8	3.3	3.3	1.6	3.6	45.8
May	2.4	1.7	1.6	1.9	1.3	3.0	1.8	1.1	1.4	1.7	0.8	0.1	0.2	0.7	1.4	3.3	0.3	1.9	0.1	2.0	4.7	13.1	1.0	4.8	52.3
June	5.1	5.2	4.6	4.0	4.4	11.6	3.6	5.4	2.0	3.4	2.2	1.5	1.0	0.1	0.4	1.8	1.7	3.4	1.2	0.8	1.3	1.9	2.0	3.5	77.1
July	3.0	1.0	0.7	0.9	0.5	1.9	0.1	—	0.6	0.4	0.4	0.4	0.4	—	—	—	2.2	2.2	2.1	0.8	0.7	3.2	1.2	5.2	33.2
August	9.9	15.6	4.9	10.2	5.6	10.7	3.8	2.9	1.2	1.8	3.9	10.0	7.6	10.0	7.8	6.5	2.6	0.3	1.7	5.9	6.1	16.2	5.5	8.0	158.7
September	3.2	2.4	3.1	3.7	1.4	0.8	3.1	2.2	0.3	0.2	0.7	1.6	2.2	1.5	4.6	1.8	2.7	3.3	2.6	1.1	2.3	3.6	3.4	3.0	54.8
October..	5.6	8.25	9	3.9	12.1	6.4	6.9	12.0	18.7	6.9	11.0	4.4	4.5	4.0	3.8	3.3	9.1	7.3	4.8	5.2	9.7	14.6	10.8	8.6	187.7
November	1.2	1.3	3.7	1.0	0.8	1.5	3.2	8.1	4.5	1.9	1.5	1.8	1.1	1.0	1.2	2.3	1.6	2.8	2.4	2.3	1.9	3.0	2.2	3.0	55.4
December	1.2	0.1	0.2	0.7	1.4	6.7	2.0	1.8	0.8	—	—	—	3.2	2.3	4.0	3.0	4.9	2.5	0.4	3.2	1.8	2.4	0.7	1.5	46.6
Total mm.	46.0	47.9	35.1	38.7	42.6	51.9	30.1	43.3	41.7	22.4	28.2	29.6	33.0	32.0	39.8	37.2	37.9	30.0	20.3	32.3	40.3	65.6	42.2	52.9	919.0
Total inches.	1.81	1.86	1.38	1.52	1.68	2.06	1.19	1.71	1.64	0.82	1.03	1.17	1.80	1.26	1.57	1.47	1.49	1.18	0.80	1.27	1.53	2.58	1.66	2.08	361.4

The amounts are given in millimetres (1 inch = 25.4 millimetres) and the hourly falls are the amounts registered as having fallen from half an hour before to half an hour after each hour. The results are published by permission of the Meteorological Office, London.





## Annual General Meeting.

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THE eighty-sixth Annual General Meeting of the Royal Cornwall Polytechnic Society was held in the Library of the Polytechnic Hall, Falmouth, on Tuesday, February 11th, 1919, the President (Mr. Henry Jenner) occupying the chair. There were present also : Captain A. Rogers, Major W. Luard, the Very Rev. Canon J. S. Burns, the Rev. M. B. Williamson, Messrs. H. D. Acland, J. Badger, F. J. Bowles, J. Chellev, T. F. G. Dexter, Howard Fox, Wilson Ll. Fox, C. G. Henderson, A. Pearce Jenkin, E. P. Kestin (Hon. Treasurer), E. W. Newton (Secretary), J. B. Phillips, W. W. J. Sharpe and J. Wickett, Mrs. F. J. Bowles, Mrs. W. Ll. Fox, Miss E. Fox, Miss O. L. Fox, Miss H. M. Hichens, Mrs. H. Jenner, Mrs. R. F. Moody, Mrs. A. Rogers, Miss Stephens, and Mrs. B. B. Chellev-Woolcock.

Letters of apology for absence were received from the Lord Bishop of Truro, the Lord St. Levan, Colonel the Hon. H. W. F. Trefusis, Colonel Sir Courtenay B. Vyvyan, Bart., Sir Arthur Pendarves Vivian, K.C.B., Professor H. Louis, and Messrs. Horton Bolitho, H. F. Elkington, R. Barclay Fox, W. H. Trewartha-James, and W. J. Stephens.

The Secretary read the minutes of the last Annual Meeting, which were duly confirmed. After that he read the Annual Report of the Council, which appears elsewhere in this Report.

The President, alluding to a passage in the Annual Report, said that the question of University Education for the South-West had not been received in a very encouraging manner by the Board of Education, but he did not think that the

promoters of the scheme were as much discouraged by their reception as would appear from the newspaper reports.

After a short discussion of a few details the adoption of the Report was moved by Mr. James Wickett, seconded by Mr. T. F. G. Dexter, and carried unanimously.

Mr. Wilson Ll. Fox presented the Report of the Observatory Committee for 1918, and read a number of interesting meteorological notes, which appear with the Report of the Observatory Committee attached to the present number of the Report of the Royal Cornwall Polytechnic Society.

Mr. J. Badger proposed and Mr. A. P. Jenkin seconded the adoption of the Observatory Report, with hearty thanks to Mr. Fox. This was carried unanimously.

The re-election of the President, Mr. Henry Jenner, F.S.A., for a second term of three years was proposed by Mr. Howard Fox, seconded by the Very Rev. Canon Burns, and carried unanimously.

The election of the following Vice-Presidents was proposed by Mr. F. J. Bowles and seconded by Mr. H. D. Acland : Mrs. George Henry Fox, Sir Robert Harvey, Mr. W. Lionel Hichens, and Mr. A. Pearse Jenkin. Carried unanimously.

At the proposal of Mr. E. W. Newton, Secretary, seconded by Mr. C. G. Henderson, the following new members were elected : Viscount Falmouth, Sir Edward Nicholl, M.P., Mr. W. Lionel Hichens, Mr. W. C. C. Anson, Mrs. Anson, the Rev. M. B. Williamson, Mrs. Williamson, Mr. R. Morton Nance, Lieutenant Garnet Newton.

The Statement of Accounts was presented by the Hon. Treasurer, Mr. E. P. Kestin, who moved its adoption, which was seconded by Mr. J. Chelley and carried. As will be seen by the statement given in another part of this Report, the financial position of the Society is very satisfactory. After investing a further sum of £115 in War Loan, thus bringing the total amount up to £750, there remained a balance of £120 in hand, as against a balance last year of £95 15s. 5d. The receipts had been somewhat less than those of last year, but the

latter had included a sum of £67 7s. 2d., returned for expenses connected with the organisation of the Tin and Tungsten Research. The expenses, exclusive of investments, had been considerably less, and there were no liabilities.

A vote of thanks to the Observatory Committee and its Hon. Secretary, Mr. Wilson Ll. Fox, was proposed by Mr. James Wickett and seconded by Mr. Kestin. It was carried unanimously.

The Rev. M. B. Williamson proposed a vote of thanks to the Finance Committee, to Mr. and Mrs. G. H. Fox for placing their Garden Room at the disposal of the Society for the Summer Meeting, and to those who had read papers at that meeting. This was seconded by Mr. Kestin and carried unanimously.

Mr. H. D. Acland called attention to the danger that might occur to the ancient monuments of Cornwall through the "reconstruction" developments which would be carried on now that the war was over. He mentioned as an instance the way in which an unsightly tramway had been brought close to the beautiful little well-chapel of Trelill in Wendron, which was threatened with damage or even destruction. He moved a resolution asking the County Council to take steps to preserve the ancient monuments of the County.

The President, in seconding the resolution, said that he hoped that the Committee of the County for the Preservation of Ancient Monuments, which had been in abeyance during the war, might now get to work again and that the suggested systematic inspection might be carried out.

The resolution was carried unanimously.

The meeting ended with a vote of thanks to the Chairman, which was proposed by Capt. A. Rogers.<sup>1</sup>

<sup>1</sup> Some apology is needed for the meagreness of this account of the Annual General Meeting of 1919. The cause is that the reporter, who should have taken, as usual, a verbatim report of the proceedings, disappointed us at the last moment, and it was necessary to make up the narrative as best we could from newspaper reports, memory, and the lists of agenda.—EDITOR.

## Report of the Council for 1918.

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IN presenting this Report for 1918, the first thing that the Council have to do is to congratulate the Members of the Society on the ending of the Great War in peace and victory.

Though there is no doubt that at any rate from the first battle of the Marne onward the whole country was confident of the ultimate victory of Britain, the last four and half years have been a time of terrible anxiety, and St. Martin's Day, 1918, on which occurred the event which virtually ended the gigantic struggle, will be remembered with feelings of the deepest thankfulness for ever.

Thus it is that the Report of the past year is presented in circumstances very different from those which existed at the last four Annual General Meetings, and though again the Council have to report that the work of this Society, like that of all similar bodies, has been much hampered and restricted during 1918 by the exigencies of the times, they can now look forward with confidence to a very different state of affairs.

The policy of keeping things going as well as was possible under war conditions has been justified by results and your Society is now ready to do more than resume its former activities and to take its fitting part in the work of restoration and reconstruction. It is not so much the past as the future that concerns us now.

The Summer Meeting was held in the Garden Room at Wodehouse Place, Falmouth, on July 30th, when the following gardens were thrown open at 11 a.m. to members and their friends: Carmino, Grove Hill, Marlborough, Rosehill, and

Wodehouse Place. The day was fine and the visitors were able thoroughly to enjoy these beautiful grounds.

The Meeting was opened at 2 p.m. by your President, Mr. Henry Jenner, who gave an address on "The Royal House of Damnonia."

This was followed by a paper by Mr. R. Morton Nance on "Celtic Words in the Cornish Dialect of English," which was read by the President, the writer being absent on military service. After this came a paper by Mr. A. Pearse Jenkin, "Suggestions for a Rainfall Map of Cornwall," and then a paper on "Ballistic Corrections in Gunnery," by Mr. R. E. Watson, formerly 2nd Lieut., R.G.A. These papers were freely discussed and will be printed in this year's Report. The proceedings ended with tea in Rosehill Garden.

Though, thanks in a great measure to the kindness of the owners of the gardens, and especially of Mr. and Mrs. George Henry Fox, who lent their Garden Room, and of Mr. and Mrs. Howard Fox, who lent their very beautiful grounds for the tea, the day was a very enjoyable one, the Summer Meeting of 1918, like those of 1916 and 1917, was a small affair compared with the pre-war Summer Meetings, Excursions, and Exhibitions. Now that the war is over your Society will be able to return to its former activities. It will not be possible, however, to hold an Exhibition during 1919. It will take the various commercial firms throughout the country all their time to reconstruct and to get into working order again, and they would not welcome the trouble of preparing exhibits this year. But in 1920 it is to be hoped that things will have settled down into a flourishing condition, and that we may be able to organise then an Exhibition such as we have never had before. Meantime it is certainly likely that we may be able to arrange in 1919 a Summer Meeting of the old proportions, with excursions and papers as in pre-war days.

The Tin and Tungsten Research Committee has continued its work in its newly organised form during the past

year. Meetings have been held in London and in Cornwall, and a large number of reports have been received from various workers in the different suggested processes. The Cornish Sub-Committee, which meets at Camborne at frequent intervals, has been doing very valuable work. It is impossible at present to give any details relating to the progress that has been made; suffice it to say that the work is going on exceedingly well and there is every prospect that the research which was initiated at the Summer Meeting of the Royal Cornwall Polytechnic Society in 1915 will prove to be of great national importance.

The second Celtic Conference took place at Neath in Glamorgan on the 2nd and 3rd of August, 1918. Your President attended as one of the delegates of the Royal Institution of Cornwall, but, since both of the delegates of the Polytechnic Society were absent on military service, he took upon himself to represent that Society also at the Conference. Delegates were also present from societies in Wales, Scotland, Ireland, Brittany, and the Isle of Man. The Conference was very successful. It resulted in the formation of an Association (of which your President was elected Vice-President for Cornwall) for promoting similar Conferences in various Celtic countries. The next Conference will be in Scotland, probably at Edinburgh. The Welsh Eisteddfod was held at Neath during the week following the Celtic Conference. Your President also attended the opening Gorsedd of this, but in this case as one of the two representatives of the Gorsedd of the Bards of Brittany, of which he is a member.

Early in 1918 a Committee for the Furtherance of University Education in the South-West sent a circular to various societies and public bodies in Cornwall and Devon, asking for signatures to a memorial to the Board of Education. The Royal Cornwall Polytechnic Society received one of these, and after some discussion and correspondence and the addition of a few short passages relating to Cornwall, the



Memorial was signed by your President, it being expressly specified that the Society, whilst approving of the general project of a South-Western University, declined to commit itself at present to the support of any particular scheme. Later an appendix, drawn up by your President, after correspondence with the Secretaries of the General Committee, calling attention to certain matters such as Mineralogy, Geology, and Celtic Antiquities and Philology, for the study of which Cornwall possessed special facilities, was signed by the President of the Royal Institution (Mr. J. C. Williams, Lord-Lieutenant of Cornwall), the President of the Polytechnic Society, and the Chairman of the Cornwall County Council (Mr. W. C. Pendarves), and added to the Memorial.

The National Trust for Places of Historic Interest and National Beauty has recently acquired the beautiful and interesting Dodman Head Estate, which will henceforth be preserved for the enjoyment of the public. This Trust, which for many years has done excellent work for the preservation of places of interest and beauty, has added the Royal Cornwall Polytechnic Society to the list of its affiliated Societies, and it to be hoped that we may be able to help in its praiseworthy object. Your President has been appointed by the Council of the National Trust as honorary local corresponding member for Cornwall.

At the Summer Meeting, as has already been mentioned, Mr. A. Pearse Jenkin read a valuable paper of suggestions for a proposed rainfall-map of Cornwall. It has now been suggested by Mr. Wilson Ll. Fox and Mr. Jenkin that a Rainfall Association should be started to carry out the plan, and this is in process of formation. The principal objects at present will be :—

- (1) To increase the number of rainfall records in the County in districts at present insufficiently represented.
- (2) To arrange for the inspection of rain-gauges.



- (3) To collect and publish to subscribers, as may be practicable, statistics of rainfall in the County.

As all this will involve a certain amount of expense a small subscription, not less than 5s. a year, is suggested.

But working members are wanted, particularly in certain districts. Anyone who would like to join the Association can obtain fuller information from Mr. A. Pearse Jenkin, Trewirgie, Redruth. The scheme is well worthy of support and is strongly recommended by your Council.

Last year the Council mentioned in their Annual Report that with their full sanction your Secretary, Mr. E. W. Newton, had undertaken important War Work in a Government Inspection Department, where his special qualifications proved to be of great service to the country. This had necessitated his absence from Cornwall, and in consequence a certain amount of his work had to be done by others. The same conditions have existed during 1918, and Mr. Newton has continued his valuable work for the State, while the business of the Society has suffered very little, if at all, by his absence. Such of his duties as Secretary as could be done from a distance, correspondence and most of the organisation of the meetings, have gone on as usual ; he has been able to get leave of absence so as to be present at the general meetings, and minor local details have been managed for him by your President, by the Secretary's son, Mr. J. V. Newton, and by the Assistant-Secretary, Mr. E. J. Moseley. The Council have no information at present how long it will be before his services will cease for the Government. He is still doing important work.

The Council have to record with the sincerest regret the loss by death of several valued members :—

January 17th. Miss Susan Elizabeth Gay was a writer of some distinction. Her history of " Old Falmouth " is well known and highly appreciated. She was also remarkable

for her religious writings, and had considerable repute as an artist.

April 13th. James Francis Holland Owen, L.R.C.P., M.R.C.S., was a well-known and highly esteemed medical practitioner in Falmouth, whither he came from Liverpool in 1883. He had been a member of the Society since 1901.

April 30th. John Couper, M.D., F.R.C.S., was a notable eye specialist, who practised at 80 Grosvenor Street, London, until his retirement about ten years ago. For some years he had been a well-known resident at Kerris Vean, Falmouth.

May 11th. Leonard Henry Courtney, Lord Courtney of Penwith, was a very eminent member of your Society, of which he was President in 1889 to 1891 and Vice-President in 1892 to 1894. A fuller account of his distinguished career as journalist, economist, and statesman will appear in the Annual Report for 1919.

August 17th. The Rev. Canon Henry Hugh King, Rector of Falmouth, joined your Society soon after his appointment to the Rectory in 1912, and was made a Vice-President in 1916. He is deeply regretted by all who knew him.

October 1st. General Evelyn Edward Thomas Boscawen, seventh Viscount Falmouth, was a distinguished army officer, who did good service in the Egyptian War of 1882 and the Nile Expedition of 1884 to 1886. His loss will be felt very much in the County, where he took a leading part in many public affairs.

October 26th. The Rt. Rev. William Boyd Carpenter, D.D., formerly Bishop of Ripon, was President of your Society in 1904 to 1906. He was an exceptionally fine preacher and general speaker, and his Presidential Addresses will long be remembered. A biographical notice of him will appear in the Annual Report for 1919.

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November 1st. Mr. John Huxtable Lake was a very well-known Falmouth man, who had been a valued member of your Society for many years. He was one of the Hon. Art Union Secretaries in 1877.

Three years ago your President, Mr. Henry Jenner, did your Society the honour of accepting the highest position it could offer; an office that has been held ever since the institution of your Society by learned and talented men, of the highest attainments. At that time you recognised the worth and excellence of Mr. Jenner, which has even been excelled during the term of his office. By the very able and painstaking manner in which he has carried out his duties, he has endeared himself to all with whom he has come in contact, and the present success of your society is largely due to his untiring work not only at the Annual and Summer Meetings, but also in presiding so efficiently at the meetings of your Council and Executive Committee.

The time has now arrived when you must consider the election of a President for the next three years, and your Council unanimously recommend the re-election of Mr. Jenner for this period, well knowing that he will serve you as faithfully in the future as he has in the past, and that the welfare and high standing of your Society is secure in his hands.

It will be your duty to elect four Vice-Presidents in the room of Sir Clifford J. Cory, Bart., M.P., The Rev. Enys H. Enys, and Major Cuthbert Ll. Fox, R.E., who retire by rotation, and the late Rev. Canon H. King. Your Council recommends the following members for election: Mrs. George Henry Fox, Sir Robert Harvey, Mr. A. Pearse Jenkin, Mr. W. Lionel Hichens.

The following members are recommended to be added to the Executive Committee: Mr. John Chelley, Mr. John Rogers, and Mr. T. F. G. Dexter.

The financial position is quite satisfactory. A further £115 worth of War Stock have been acquired, making a total sum of £750 invested by your Society, and the Balance Sheet which will be presented by your Treasurer will show a credit balance.

Hon. Treasurer in Account with the Royal Cornwall  
Polytechnic Society.

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To Balance in Capital and Counties Bank . . . . .	95	15	5	£ s. d.
„ Donation H.R.H. Duke of Cornwall . . . . .	5	0	0	
„ Members' Subscriptions for 1918 . . . . .	126	4	0	
Arrears . . . . .	8	7	10	
				134 11 10
„ Rent of Hall . . . . .	311	3	0	
„ Rent of Committee Rooms . . . . .	36	19	2	
„ Rent of Club Room . . . . .	3	15	0	
„ Acknowledgment Rent . . . . .	0	1	0	
„ Received from Educational Authorities towards Renovation of Committee Rooms . . . . .	10	0	0	
„ Interest on War Stock . . . . .	37	10	0	
„ Interest on Deposit Account . . . . .	0	0	6	
				37 19 6
„ Subscription overpaid . . . . .	0	15	0	
„ Outstanding Cheque, Waterlow Bros. . . . .	4	18	0	

	£	s.	d.
By Salaries . . . . .	120	0	0
„ Hall Keeper's Wages . . . . .	26	0	0
„ Lighting and Coal . . . . .	7	0	0
„ Travelling Expenses . . . . .	10	13	3
„ Insurances, Rates and Taxes . . . . .	103	11	3
„ Repairs and Renewals . . . . .	40	7	4
„ Labour and Materials . . . . .	3	1	6
„ Printing and Stationery . . . . .	13	10	9
„ Printing Annual Report . . . . .	35	10	6
„ Postages, Telegrams, and Railway Carriage . . . . .	13	0	10
„ Licence . . . . .	1	0	0
„ Rent of Caretaker's Rooms . . . . .	13	0	0
„ Refreshments . . . . .	3	10	0
„ Reporting Annual Meeting . . . . .	1	6	0
„ Winding Clock . . . . .	1	0	0
„ Cheque Books . . . . .	0	15	0
„ Outstanding Cheques, 1917 . . . . .	5	9	0
„ Donation to Tin and Tungsten Research Fund . . . . .	5	5	0
„ Donation to National Trust for preservation of places of Historic Interest . . . . .	1	1	0
„ Invested in War Bonds . . . . .	115	15	10
„ Balance in Capital and Counties Bank, Falmouth, 31st December, 1918 . . . . .	119	0	3
„ In Secretary's hands . . . . .	1	0	0
	120	0	3
	£640	17	11

		£	s.	d.
ASSETS—To Balance in Capital and Counties Bank, Falmouth, 31st Dec., 1918	119	0	3	
„ In Secretary's hands	1	0	0	
„ Invested in War Bonds	750	0	0	
„ „ on Deposit Account	17	8	1	
	£887	s.	d.	

LIABILITIES—Nil.

*Examined with vouchers and found correct.*

F. J. BOWLES,	(	Audit
W. W. J. SHARPE,	)	Committee.
E. P. KESTIS, Hon. Treasurer.		

## Summer Meeting, 1918.

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THE Summer Meeting of the Royal Cornwall Polytechnic Society was held in the Garden Room, Wodehouse Place, Falmouth, on Tuesday, July 30th, the President (Mr. H. Jenner) occupying the chair. There were also present: the Hon. Neville and Mrs. Hood, Major Luard, the Very Rev. Canon J. S. Burns, the Rev. R. F. Moody, the Rev. D. G. Whitley, Messrs. J. Badger, H. Bailey, Horton Bolitho, F. J. Bowles, J. Chellew, T. F. G. Dexter, W. Ll. Fox, L. Grigg, A. P. Jenkin, C. C. Millet, E. W. Newton (Secretary), C. M. Pender, J. B. Phillips, C. Phillips, and W. W. J. Sharpe, Mrs. Badger, Mrs. Bain, Miss E. F. Bain, Mrs. Horton Bolitho, Mrs. Bowles, Mrs. W. Ll. Fox, Miss A. S. Fox, Miss H. M. Hichens, Miss M. Jenkin, Mrs. H. Jenner, Miss E. M. King, Mrs. R. F. Moody, Mrs. Newton, Mrs. Oxland, Miss A. M. Phillips, Mrs. Wethered, and Mrs. Chellew-Woolcock.

Apologies for unavoidable absence were received from Viscount Clifden, Lord St. Levan, Sir A. P. Vivian, Messrs. J. Gilbert, H. D. Aeland, Alexander, and E. Kitto.

The President gave an address, the subject of which was "The Royal House of Damnonia." This appears in another part of this Report.

Canon Burns asked when the distinction between Damnonia and Cornwall became real and lasting?

The President: As soon as the Britons were driven back into what is now Cornwall. The place that succeeded in name to Damnonia is Devonshire. I think Cornubia had that name probably all the time, only it was then a part of the

kingdom of Damnonia. Later when the kings were driven back out of Devon into Cornwall it was the only part they had.

Canon Burns : Then it lost the name of Damnonia when Devon was lost ?

The President : The whole kingdom was probably called Damnonia until Devon was lost. Cornubia would be a sort of county or subdivision of Damnonia before that.

Mr. R. Morton Nance was to have read a paper on "Celtic Words in the Cornish Dialect of English," but, the President said, Mr. Nance had the best excuse in the world for not being present, he was with the Army. (Applause.) The President then read Mr. Nance's paper, which appears elsewhere in this Report.

The President added that he thought it was an extremely good paper, and was really interesting as showing what Mr. Nance was working on. He had a great deal more material than that, and had been most successful in getting hold of people whom one did not always get hold of, and getting them to tell him things that they don't always tell.

Rev. D. Gath Whitley asked if there was any trace in ancient Cornish of words that went back before the Celtic period ; words that could not be traced to any Celtic group or form whatever, and which went back to a greater antiquity. Sir John Rhys was of opinion that certain words in Cornwall could not be compared with any Celtic words, and that they might belong to a still older race. He had compared some of these words with the ancient Basque, and this seemed to show that a race existed here before the Celts. Some time ago there was a discussion as to whether it was not a pre-Celtic game to stand around someone's cap and recite a formula by which to discover who was to stand out, and it was thought that this was a pre-Celtic incantation for the purpose of finding out the victim who was to be sacrificed to some heathen god. He would like to know whether "Ena, mena, mona, my," etc., was Celtic or not.



The President said the words Mr. Whitley had quoted belonged to a class, and he had seen fifty or sixty forms of them, many of which had been traced back to Celtic numerals. They resembled the Yorkshire custom of counting sheep or cattle by a corrupted form of Welsh numerals, in which, as in Welsh, the words for sixteen, seventeen, eighteen and nineteen meant one and fifteen, two and fifteen, three and fifteen, and four and fifteen. He did not think it had been decided that the rhymes to which Mr. Whitley referred were pre-Celtic,<sup>1</sup> and on the broader question he did not think any pre-Celtic words were known as such. Of course there were pre-Celtic people here, but how far they lived in words in the language it was very difficult to tell, because they had a varying vocabulary in all Celtic languages, and it was very difficult to say for certain that a word was not Celtic, although there were some words which occurred only in Welsh, some only in Breton, and some only in Cornish.

Mrs. Moody mentioned that in her part of Cornwall they used the word "stag" as representing extreme pressure of work.

The President : And they talk also of being "stogged" in the mire.

Canon Burns : Could you give us any other interpretation of "heavy-cake" than the English ?

The President : It is heavy (laughter).

Canon Burns : It is not very complimentary to the cake. Were they not called "heva" cakes ?

The President : That is rather a good suggestion. Have you any authority ?

A member stated that it used to be made for a festival after a catch of pilehards.

Mr. Pearse Jenkin read a paper on "Suggestions for a Rainfall Map of Cornwall," which appears elsewhere in this Report.

The President said he was sure they were very much interested in the paper, and that Mr. Pearse Jenkin had established his point that there should be a good deal more investigation. Even with the few records available it seemed to be clear that one got a point in the hill country with the highest rainfall of all, and gradually circling around it the rainfall got lower and lower, until around the coast one got the lowest rainfall of all.

Rev. D. Gath Whitley said that fifty years ago his father established a series of rain gauges over Cornwall and Devon and he had the working out of the results. The gauge for Truro was established at a place about two hundred feet above the sea, and the rainfall recorded there was from forty to forty-five inches in a year. He believed that was the average for between twenty and thirty years. He would like to know whether any definite results were obtained as to which were the driest and wettest months in different parts of Cornwall. So far as the observations to which he had referred were concerned they showed that the driest month was February on the average for twenty-five years. The wettest month was October. Autumn was always wetter than spring.

Mr. W. Ll. Fox said the Executive Committee were most interested in the subject and hoped Mr. Pearse Jenkin's paper would lead to an increase in the number of gauges in the County. The Executive Committee were prepared to promote this idea in every way they could. With regard to the rainfall being so much less than the coast, at the Scilly Isles it was very much less than on the mainland close by. The clouds passed over them and got condensed upon our hills.

The Rev. R. F. Moody asked why the Royal Institution had dropped their rain gauge.

Mr. Pearse Jenkin said he did not think the position was a satisfactory one for a reliable record.

Mr. Phillips asked if there were any records to show whether the rainfall was less now than in the fifties. The

temperature is much milder than it was then. Would not the cutting down of trees affect the rainfall ?

The President : Have you any practical suggestion for getting this work done ? We ought to take some real steps. The Executive Committee are willing to give all the help they can, if we know exactly what to do. Mr. Pearse Jenkin might formulate details of a plan and put it before us. It seems to me to be extremely important.

Mr. W. Ll. Fox said if the meteorological tables were looked at they could give the rainfall for the different months for forty-five years. The driest month was May, with 13 mm. Then came June with 14, April with 16, and February with 17. They always found the last six months of the year wetter than the first six months.

Mr. Pearse Jenkin said the driest months at Redruth were May and June, and the wettest were October and December.

Mr. R. E. Watson, B.Sc.(Lond.), late 2nd Lieutenant R.G.A., read a paper on " Ballistic Corrections in Gunnery." This appears elsewhere in this Report.

The President said he was very glad to hear that last sentence [which see on p. 162] because after all that went before it seemed a wonder to him that anybody ever hit anything. (Laughter.) It was a most interesting paper, and he had no idea gunnery was such an intricate science.

Mr. F. J. Bowles proposed a vote of thanks to those who had contributed papers, and this was seconded by Mr. W. Ll. Fox, and carried unanimously.

The meeting then terminated, and tea was subsequently served in the garden of Roschill.

# The Royal House of Damnonia.

PRESIDENTIAL ADDRESS AT THE SUMMER MEETING OF THE  
ROYAL CORNWALL POLYTECHNIC SOCIETY, 30th July,  
1918.

BY HENRY JENNER, F.S.A.

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THE original territory of the British tribe or nation of the Damnonii, Dumnonii, or Domnonii during the Roman period extended from the Land's End to the River Parrett in Somersetshire, or even perhaps to the marshes of the Brue and the foot of the Mendips, and to the River Axe, which more or less divides the present Devon and Somerset from Dorset. Beyond the Parrett, Brue or Mendips came the territory of the Belgæ, which extended from the Severn estuary to the eastern boundary of Hampshire, and beyond the Axe was the country of the small tribe of the Durotriges, "water-dwellers,"<sup>1</sup> from whom Dorset derives its name. Later, after the Saxon invasion had begun, the kingdom of Damnonia was larger, and included at first the whole of Somerset and a part, if not at one time all, of Dorset, marching on the north with the Principality or Earldom of Caer Gloyw or Gloucester with the Avon for boundary. This kingdom possessed a Royal House, whose history, though no doubt rather vague and mixed with romance, is fairly traceable from

<sup>1</sup> Cornish *dour*, water, *triga*, to dwell (Welsh *dwr*, *trigo*, Breton, *dour*, water, but *triga* is not used in Breton). The Saxons evidently translated *triges* into *sætan*, inhabitants, but left *duro* in British. The Durotriges lived along the sea-coast from the Axe to the Christchurch Avon and Stour.

the fifth century to the ninth, and perhaps a little earlier and later. What sort of jurisdiction, if any, the kings of that House had before the withdrawal of the Roman power and after the absorption of Cornwall by the Saxons, we have no means of knowing, nor do we know in what way they were connected, if at all, with chiefs of the Damnonii during and before the Roman occupation. Certainly by their names and by what we know of them they would seem to have been thoroughly Romanised and Christianised Britons; and during the period of the Saxon conquests they were real and effective kings, though over a gradually diminishing kingdom. Also this Royal House seems to have been for the earlier part of the period the most influential of the British royal families. They have no traceable representative at the present day, so there is no occasion to get up a League of—shall we say? the White Heather, *Erica vagans*, to restore them.

We need not regard in this history the more or less fabulous B.C. people, such as Corineus, who came to Britain with Brutus, the great-grandson of Æneas, about B.C. 1100, Cloten or Clydno, the father of Dyfnwal-Moelmud the legislator, Heruinus, who married Regan the daughter of King Lear, and others who are called Kings, Dukes, or Earls of Cornwall, which generally means Damnonia, by Geoffrey of Monmouth and other early chroniclers. These, except when they are ante-dated confusions of names, have no bearings on the subject. Even Asclepiodotus, who overcame Allectus, the successor of Carausius, in 296, and is described as Duke of Cornwall by Geoffrey, need not concern us here. He is only described as “Præfectus Prætorio,” Commander of the Imperial Guards, by Paulus Orosius and other Roman writers, and, as he recovered Britain for Constantius Chlorus, and did not, as Geoffrey asserts, make himself king, this is probably all that he was. Possibly he had a command under Constantius in south-west Britain, which may have been recorded in some history to which Geoffrey or his authorities had access. We

may, however, begin with one story of the third century of the Christian era.

Somewhere about A.D. 270 Constantius Chlorus, a Roman general, was at Drepanum, a town in Bithynia, where he stayed at a certain inn. The innkeeper had a beautiful daughter called Helen, a name which had been well known in that corner of Asia Minor some 1500 years before, for it is not so very far from Troy. Constantius fell in love with her and married her. Later, when he was made Cæsar by Diocletian in 292, he was persuaded to divorce her to marry Theodora, the stepdaughter of the Emperor Maximian. The son of Helen was the Emperor Constantine the Great, and his behaviour to his mother is one of the few good points in the career of that rather shady politician. He treated her with every distinction, conferred on her the title of Augusta, and changed the name of her birthplace to Helenopolis. She became a devout Christian and is known to history as the finder of the Holy Sepulchre and of the relic which ever since has been held to be the True Cross. Constantius as Cæsar had jurisdiction over Britain, Gaul, and Spain; with Augusta Treverorum, which we now call Trèves or Trier, as his capital. He died at York in 306. You may well ask, what has this story to do with Cornwall and its Royal Family? The answer is—nothing whatever in actual fact; but the true history has been so mixed up with the story of another Helen, who was very probably connected with Cornwall, that one must needs tell it by way of clearing the ground. Geoffrey of Monmouth tells us that Constantius married Helen, daughter of Coel of Caercolvin or Colchester, or, as the chronicle of Tyssilio says, of Caer Gloyw or Gloucester, and that their son Constantine advanced his great-uncles, Leolin (Llewelyn), Trahern, and Marius, to senatorial rank, and sent Trahern to Britain to put down a rising by one Octavius, Duke of the Wissei, who had made himself king. Trahern was unsuccessful and Octavius, or Eudaf, as the Welsh chronicles call him, became King of



Britain. This is probably a great exaggeration, for Roman authorities do not even mention him. Geoffrey gets his dates into a very impossible tangle, and puts Eudaf's rising in the time of Constantine the Great, who died in 337, and his reign as continuing to the time of Gratian and Valentinian (375 to 383) and even later. The fact is that he has mixed up two or three Constantines and two Helens. He states, as we have seen, that St. Helen, the mother of Constantine the Great, was the daughter of Coel, Prince or Earl of Caereolvin or Colchester, whereas she was really the daughter of an innkeeper at Drepanum in Bithynia. This is not entirely Geoffrey's invention, for in the Welsh genealogies in Harl. MS. 3859, a tenth-century copy of Nennius, two hundred years earlier than Geoffrey, there is a statement that Constantine was the "son of Constrantius [*sic*] and Helen Luiedauc, *who went out of Britain to seek the Cross as far as Jerusalem and thence brought it to Constantinople.*"<sup>1</sup> Eudaf had a son or nephew, Conan Meriadoc, and a daughter whom he gave in marriage to one whom Geoffrey calls Maximian, whom in his old age he nominated as his successor. Maximian's nomination had been made by the advice of Caradoc, Duke or King of Cornwall, on the grounds that, being the son of Leolin the uncle of Helen, he was of British descent, and that on his mother's side and by his place of birth he was a Roman. Conan Meriadoc had opposed the election of Maximian, wanting the crown for himself, but eventually they were reconciled, and it was this Conan who led a great host of Britons into Armorica and settled them there, acting in this as Maximian's lieutenant. Then, in Geoffrey's story, comes the incident of St. Ursula. Dianotus, the brother of Caradoc, had succeeded to the kingdom of Cornwall, and in his time Conan and his men sent

<sup>1</sup> "Map Constantini Magni map Constrantii et Helen Luic dauc quæ de Britannia exivit ad crucem querendam ad Ierusalem, et inde attulit secum usque ad Constantinopolin et est ibi usque in hodiernum diem."



home for wives to be sent out for them. Dianotus<sup>1</sup> had a beautiful daughter Ursula, and she and eleven thousand noble ladies, with sixty thousand of the meaner sort, were sent off in many ships for Armorica. How contrary winds drove them a very long way out of their course, until they got among strange islands and barbarous people and were martyred by Huns and Piets somewhere on the Rhine, may be read in various places and, if that work of Flemish art has survived the war, may be seen depicted on the beautiful shrine by Hans Memling in the Hospital of St. John at Bruges. Moreover, if one ever goes to Cologne again, one may see in her church the reputed bones of the Cornish princess and her companions, and hear the legend on the spot.

This Maximian of Geoffrey is evidently intended for that very remarkable man, Magnus Clemens Maximus, Roman Emperor in Britain, Gaul, and Spain from 383 to 388. Zosimus says that he was an Iberian, that is to say, a Spaniard, by birth, "Ἰβηρ τὸ γένος." Paulus Orosius calls him "vir quidem strenuus et probus atque Augusto dignus," but most Greek and Roman writers, as well as Gildas, who lavishes on him a long paragraph of abuse, and Nennius, call him "tyrannus," that is to say, usurper. This is not quite fair, for he was acknowledged Emperor from the death of Gratian in 383, over Britain, Gaul, and Spain, and the Empire was elective, not hereditary. He was chosen Emperor in Britain, took an army over to Gaul, defeated and killed Gratian, the son of Valentinian I., a rather ineffective person who had succeeded to part of the Western Empire, in conjunction with his younger brother Valentinian II., on the death of their uncle Valens in 378. Maximus was acknowledged as Emperor over Gratian's dominions by Theodosius, then Emperor of the East

<sup>1</sup> The earliest form of the St. Ursula legend says that the name of her father is unknown. Mr. Baring-Gould suggests that Dianotus is *Deo notus*, known to God, or, as we might say, her father was "the Lord knows who."

only, and by Valentinian, to whom were assigned Italy, Africa, and Illyricum. Had he been content with this arrangement all might have been well, but he proceeded to try and turn Valentinian out of Italy and Illyricum, and Theodosius, who sided with the latter, brought a large army against him, defeated him in Pannonia, and pursued him to Aquileia, where he put him to death. During the few years in which he administered the Western Prefecture from his capital city of Trèves, he seems to have been quite an effective emperor, and it was only his ultimate failure that caused him to be accounted a usurper. This much is from authentic Greek and Roman history. But there is also a British tradition of him, which is found in a very muddled form in Geoffrey's already-mentioned story, and in Welsh romances, genealogies, and triads. In these he becomes a hero of romance as "Macsen Wledig," Maximus the Emperor, and as King Massen, a quite estimable character, he even comes into one of the interpolated episodes in so late a Celtic document as the Cornish drama of St. Meriasek of 1504. Nennius, probably in the eighth century, tells of his taking a host of Britons over to Gaul and settling them in Armorica. Gildas in the sixth century speaks of his going over to Gaul with a great number of followers and depriving Britain of all its armed soldiers and military forces and its valiant youth, who never returned, though he does not say where they settled; and, calling him "germen suæ plantationis amarissimæ," a sprout of her (i.e. Britain's) own most bitter planting, seems to hint that he was a Briton. Welsh genealogies differ as to his father. The tenth-century pedigree in Harl. MS. 3859 calls him the son of Protee, son of Protector. The fourteenth-century *Llyvyr Llewelyn Offeiriad* (Book of Llewelyn the Priest) in the library of Jesus College, Oxford, says that he was the son of Maximianus, son of Constantine, son of Constantius, which was certainly not the case, and other genealogies, though they mention his children, do not give his parentage. It is only in

the Chronicle of Tysilio, in the *Brut y Brenhined*, and in Geoffrey of Monmouth's History, all three of them probably variants of the same Chronicle,<sup>1</sup> that he is called the son of Leolin (Llewelyn), the uncle of Helen, wife of Constantius. As these chronicles say that on his mother's side and by his birthplace he was a Roman, it is probable that he was not born in Britain, so that those who called him a Spaniard may have been quite right as regards his actual place of birth. The *Brut Tysilio* gives Elen (or Helen) as the name of the daughter of Eudaf (Octavius) whom "Maxen" married, but neither Geoffrey's Latin nor the complete Welsh version gives it, and in these she is only described as the daughter of Eudaf. Various Welsh triads and genealogies call her Helen, and her name is given also in the romantic story *Breidwyt Maxen Wledic*, the Dream of the Emperor Maximus, in the Red Book of Hergest.

Maximus and Helen had several sons. One, Victor by name, is mentioned by Roman historians as having been put to death in Gaul by Arbogastes. The others, Owain, Cystennin (Constantine), Peblie (Publicola), Ednyfed, Anthun (Antonius), and Dunawd (Donatus) or Dimet, are mentioned in Welsh genealogies and triads. A daughter, Severa, is mentioned as the wife of Guarthigirnus (Vortigern) and the

<sup>1</sup> The question of the relation of these three forms of the Chronicle of the Kings of Britain to one another is too long to discuss here. Personally I am disposed to hold to the opinion which I expressed in the descriptions of Welsh MSS. which I made for H. L. D. Ward's "Catalogue of Romances," printed in 1883, that the *Brut Tysilio* is an abridged translation, the *Brut y Brenhined* (Cott. MS. Cleop. B. v.) a rather free translation, and the *Brut Gruffydd ap Arthur* a complete translation of Geoffrey's Latin *Historia Regum Britannia*. There is no doubt about the last, but the *Brut Tysilio* contains some details that are not in Geoffrey, which complicates the matter. I do not place much reliance on the statements of the prologues and colophons of the MSS., and I certainly do not agree with M. de la Borderie ("Les Bretons insulaires et les Anglo-Saxons," ch. v.) in thinking that the *Brut y Brenhined* was the original from which Geoffrey drew his information.

mother of Pascent, in the genealogy of Concenn, inscribed on the ninth-century stone, known as the "Pillar of Eliseg," at Valle Crucis Abbey, near Langollen.<sup>1</sup>

Some Welsh authorities make out Eudaf to have been the son of the already-mentioned Caradog or Cradawg, Duke or King of Cornwall. This is not likely, but it is probable that they were nearly related, and they may even have been brothers. Eudaf began as Prince of Erging and Ewyas, in parts of Herefordshire and Monmouthshire. Conan Meriadoc is called by some the son, by others the nephew of Eudaf. The latter is the more probable.

It is quite clear that Geoffrey and other Welsh writers have mixed up two Helens, the mother of Constantine and the wife of Maximus. The Tysilio Chronicle, it is true, distinguishes them clearly enough, but even that, like other chronicles and genealogies, attributes to the former British relationships which really belong to the latter. The epithet *Lluyddawg* (of the hosts), which was given to the younger Helen because of her association with her cousin (or brother) Conan in sending hosts of emigrants to Armorica, is found, as early as the tenth-century genealogy in Harl. 3859 and often later, applied to the older one, though some Welshmen have tried to make out that in the latter case it should be *Llwyddawg*, prosperous—which is rather nonsense. Probably the fact that the really British Helen also had a son Constantine may have helped to produce the confusion, but this muddle is not peculiar to Britain. It is found quite independently in another part of Maximus's dominions, in fact in what was for some time his capital city.

If one goes to Trèves, one of the most interesting towns for Roman remains in North-Western Europe, which I hope

<sup>1</sup> "Pascent . . . filius Guarthigirni, quem benedixit Germanus, quem peperit ei Severa, filia Maximi regis qui occidit regem Romanorum (sc. Gratian)." Amended reading by Mr. A. Ansecombe in *Archiv für Celtische Lexikographie*, Bd. I., p. 514.

our air-raids have not damaged, one is told that the Empress Helen founded the cathedral, giving up her own palace for it, and presented to it the well-known relic of the Holy Coat. There are shown by the side of the steps leading to the high altar large statues of Constantine and Helena, so there is no question that the present belief is that the foundress was the wife of Constantius Chlorus. But against that is the fact that the nucleus of the building, some of which still remains, is a quadrangular basilica built by Valentinian I., who began to reign about thirty-six years after the death of that Helen, and there is no reason to suppose that she was ever at Trèves. This is evidently another muddle of the two Helens, and it is very good confirmation of the Welsh account of the name of the wife of Maximus.

Maximus was killed in 388. What became of Helen we do not know, but her memory is preserved in Wales in the name of more than one Roman road, *Sarn Helen*, Helen's Causeway, and there is some reason to think that some of the few St. Helen churches in Wales, Cornwall, and Devon may be called after her; but though Mr. Baring-Gould is very positive about that, I am not quite so certain.

It is evident by such Latin names as Helen, Octavius, Dunawd, Constantine, Anthun, Peblig that this family, which was probably closely connected with the later Royal House of Damnonia, belonged to the class of Romanised Britons. They were also evidently Christians. How far any of them could really be called "Kings" in the time before the withdrawal of the Roman legions is another matter. But they were certainly leaders or chiefs of some sort.

After the death of Maximus, Theodosius kept up a sufficiently strong government to keep even Britain quiet, but his son Honorius, who succeeded him in 395 as Emperor of the West, was a singularly inefficient person. The legions in Britain elected two Emperors in succession, Mareus and Gratian Municeps. Nothing is known of them, except that



they were elected and soon killed. A third Emperor, Owain the eldest son of Maximus, is mentioned in Welsh triads. He seems to have preceded Marcus and Gratian, but was perhaps chosen by the Britons in opposition to them. Then came a man of more importance. In 407 the legions in Britain elected one Constantine, of whom Paulus Orosius says that he was "*ex infima militia*," of the lowest military rank, and was elected "*propter solam spem nominis sine merito virtutis*," only on account of the hope of his name, not of any deserts of valour, and Sozomen gives the same reason. He gave a good deal of trouble to Honorius, and at one time made himself master of most of Spain and Gaul, as well as of Britain. Eventually he was overcome, and he and his son Constans, whom he had made Cæsar—"ex monacho Cæsarem factum," from a monk made Cæsar, as Orosius says—were put to death in 411. Was he the son of Maximus and Helen? It is quite possible. The statement that he was elected only on account of his name sounds rather improbable, and he must have been a man of ability and able to inspire confidence in his troops. But for the treachery of his trusted general, Gerontius, who, I am sorry to say, was certainly a Briton and perhaps was one of the Cornish Royal Family, in which his name was a favourite one, he might have overcome Honorius and gained the whole Empire, and he had certainly gained a considerable part of it. With regard to him Geoffrey makes another confusion between two persons of the same name. He tells how after the death of Gratian Municeps there was trouble in Britain, civil strife and incursions of barbarians. It was then that the Britons sent their mournful appeal to "*Aetius thrice Consul*"—Geoffrey calls him *Agitius*, copying from Gildas, though some manuscripts of the latter get the name right. This is an anachronism, for Aetius, the victor against Attila at Chalons in 451, was certainly not consul for the third time in 406 or 407, but in 446, which fits in better with another Constantine. Geoffrey then tells how the Britons sent

Guethelin, Archbishop of London, over to Armorica to ask help of Aldroen, King of that country. He sent his younger brother, Constantine, to be King of Britain. This Constantine is crowned at Silchester and married to a noble Roman lady, by whom he has three sons, Constans, Aurelius Ambrosius, and Uther Pendragon. Constans becomes a monk in the church of St. Amphibalus at Winchester.<sup>1</sup> Then a certain Pict in his service assassinates Constantine. After his father's death Constans is taken out of his monastery and made King of Britain by Vortigern, Consul of the Gewissei, to whom he commits the whole government of the country. The brothers of Constans, Ambrosius and Uthyr, were then children in their cradles, and so incapable of government. Vortigern brings in some Picts as guards. These eventually kill Constans, and Vortigern becomes sole King of Britain. Ambrosius and Uthyr are taken over to Brittany for safety. After that follow the coming of Hengist and Horsa, the visit of St. German, the story of Merlin, and the death of Vortigern, Ambrosius having come over from Brittany to take the kingdom.

The true story probably is that after the death of the usurper Constantine there really was a period of anarchy in Britain such as Geoffrey describes. Part of his story is taken from that of the usurping Emperor, who, as I have said, may have been a son of Maximus and Helen. It is very improbable that two Constantines should have had sons called Constans, both of whom were taken from monasteries, one to be made Caesar and the other King of Britain. But the Welsh genealogies and triads tell of a Constantine whom they call Cystennin Gorneu, Constantine of Cornwall, and to whom they also give the epithets "Bendigaid," the Blessed, and "Llydaw," of Brittany. This man is said to have been the son of Cynfor, and great-grandson of the Conan Meriadoc

<sup>1</sup> Or perhaps Caerwent in Monmouth. The British name of *Venta Belgarum*, Winchester, is also *Caerwynt*. The Monmouthshire town was *Venta Silurum*, and there is a local tradition, of no great value, connecting St. Amphibalus with the neighbourhood of Caerleon-on-Usk.



who led the migration to Armorica in the time of his sister's or cousin's husband, Maximus. Constantine's elder brother, Aldor, Geoffrey's "Aldroen," remained in Brittany, apparently as Prince of the Armorican Damnonia. He married a sister of St. German of Auxerre, and from him descended St. Samson, St. Cadvan, St. Illtyd, and several other saints. The name of Cynfor, the father of Aldor and Constantine, is found in Breton history in its earlier form *Conmor*, in the form *Cunomorus* it is found on the inscribed stone at Fowey, and perhaps occurs as *Comoere*, the name of a bishop, in the Bodmin manumissions. Constantine came over to Britain, and seems to have become overlord of Britain in general, as well as King of Damnonia. Probably he acquired the latter as the descendant of Conan Meriadoc. In the very tangled story of the succession to the Breton principalities of Domnonia and Cornubia. names which clearly show where the Breton migrations came from, the descendants of Conan seem to have divided the country between them, and though we have no information as to who succeeded Dianotus (or whatever his real name was) as King of Cornwall, it seems probable that his line became extinct, and that that of Conan Meriadoc became the representative of the house of Caradog. According to Welsh triads one son of Cystennyn Gorneu was Cystennyn Fychan, Constantine the younger. It is said (*Myv. Arch.*, pp. 393, 395) that Gwrtheyrn (Vortigern) "a beris lladd Custennin Vychan vab Custennin Vendigeit oe vrat, a dehol y deu vroder, Emrys Wledig ac Uthur Pendragon, or ynys hon hyd yn llydaw. a chymryd y goron ar vrenhiniaeth" [brought about by treachery the slaying of Constantine the younger, the son of Constantine the Blessed, and banished his two brothers, Ambrosius Aurelius and Uthyr Pendragon, from this island into Brittany and took the crown of the kingdom]. This is evidently the "Constans" of Geoffrey, who has mixed him up with the son of the usurping emperor.

Constantine of Cornwall had apparently four sons, or possibly six, and with him the succession to the kingdom of Damnonia becomes at least less conjectural. One son was this Constantine the younger, if he is not a borrowing from the Constans of Roman history. Two others were Ambrosius, who is an undoubted historical character, mentioned with approval by Gildas, and Uthyr the father of Arthur, who is no doubt partly legendary. There are two who are vague and legendary, one of whom was St. Digain, of whom all we know is that he founded a church called Llangernyw, the Church of the Cornishman, in Denbighshire, and that his feast is November 21st. The *Bonedd y Saint* (Pedigrees of the Saints) only say of him, "Digain yn Llangernyw ap Custennin Gorneu." The other was Gorneu, who is casually mentioned in lists in some of the stories in the Red Book of Hergest as "Gorneu ap Cystennin Gorneu." Another son, who is more or less historical, was Erbyn (or Urbinian—another Latin name). He was probably the eldest, and inherited the kingdom of Damnonia. There he seems to have reigned peaceably, while his younger brothers and his nephew were overlords of Britain. Very little is known of him, except the names of some of his sons, and the fact that he retired from his kingdom and became a monk. He is probably the name-saint of St. Ervan, and it may be that the Treverbys in St. Austell, St. Neots, and Probus, and Treverven in Buryan are called after him. Besides Geraint (or Gerontius—yet another Roman name), his successor, he had a son Ysgin, who is counted as a saint, and the founder of Llanhesgin in Monmouthshire. The story of Killweh and Olwen mentions two other sons, Dyvel and Ermid, the latter of whom had two sons, Gwyn and Kyndrwyn. We have a pleasing description of Erbyn in the story of "Geraint and Enid" as a kindly old man, with a great affection for his brave son.

Geraint, the son of Erbyn, is a very definite historical character, of whom I gave so long an account in a

paper on "Dingerein and the Geraints" in the Report for 1914, that I shall cut his story very short now, though he was perhaps the most interesting of all our Kings. He is chiefly known to us through the Welsh tale of "Geraint ap Erbyn" in the Red Book of Hergest, the Lament for his death by Llywarch Hen, certain mentions of him in Welsh triads and in the *Englynion y Clyweid* (Stanzas of Hearing), an allusion in Aneurin's poem *Gododin*, which refers to his presence at the Battle of Cattrath, and a description of his castle in a poem of Taliessin. In Cornwall his name survives in the church of Gerrans, which he probably founded, and in the fort of Dingerein close by, where seems to have been the monastery from which Kenstec, Bishop of the Cornish, wrote his letter of allegiance to Ceolnoth, Archbishop of Canterbury, in about 865. Roserrans in St. Columb is probably the Heath of Geraint; a creek of the Fal running up to Philleigh is Polgerran, the Pool of Geraint, and there is a Kilygerran or Kilgerran Head, probably meaning the Cell or Retreat of Geraint, in St. Anthony in Roseland. There is also a Kilgerran near Cardigan. The tale tells of Geraint's wooing and winning of Enid the daughter of Earl Yniwl, and his not very chivalrous treatment of her, and from that and a French version of the same story by Chrétien de Troyes is derived Tennyson's well-known poem of "Enid." The triads tell how he was one of the three Admirals of the Island of Britain, and Llywarch Hen's Lament relates his death at the Battle of Llongborth, the Port of Ships, in about 522. His saying or proverb in the *Englynion y Clyweid* is "Byr-hoetlauc digassauc saint" (Short-lived is the foe of the Saints), and he is called "Car i saint," a friend to the saints. From this we learn that he was a supporter of Celtic monasteries. He appears to have married twice. One wife was the Enid of the romance of Geraint ap Erbyn, one of the most beautiful characters in all mediæval fiction and probably founded on fact, and the other was Gwyar, one of the six daughters of

Amlawdd Wledig, another of whom was Eigyr or Igraine, the mother of Arthur. He had five sons, Cyngar ; Selyf, Selevan, or Salamon ; Just or Iestyn ; Cadur and Caw. All except Caw eventually became monks, and Caw himself founded a great family of "saints." Selyf, Cyngar, and Caw appear to have been children of Gwyar, so probably Just and Cadur, whose mother is not mentioned in the genealogies, were sons of Enid.

Of these sons Selyf, as the Welsh call him, succeeded his father, married Gwen, daughter of Cynyr of Caer Gaweh in Pembroke, the sister of St. Non, the mother of St. David, and was the father of St. Cuby. Apparently he abdicated and became a monk. It is extremely probable that he is the saint who is now called St. Levan. Boslevan in Buryan is called "Bosselyvan" in Athelstan's charter, and that means the Dwelling of Selevan. It is possible that *Selus*, whose tombstone is in the church of St. Just-in-Penwith, is Selyf. There are some rather silly legends about St. Levan current in his parish.

St. Cuby was invited to succeed his father, but declined, preferring to be a monk. He probably founded St. Cuby in Cornwall and also Duloe, where the church is called after him and where his well in Kippiscombe, Cuby's valley, is still to be seen. His mother, Gwen, known to us as St. Wenn, probably founded Morval, the next parish to Duloe, and the church of St. Wenn, and possibly Trewen. Somewhere in Cornwall, but I have as yet failed to find out where, though Bannister gives it in his Glossary, there is a place called Alterwen, the Altar of St. Wenn, a parallel name to that of the Altar of her sister, St. Non, at Alternun. St. Cuby went to Wales, and eventually settled in a fort given to him by Maelgwn of Gwynedd at what is now Holyhead in English, but is still called in Welsh Caergybi, Cuby's fort.

Cyngar, also called Doewin or Dochan, founded Congresbury in Somerset, the two Llandoughs in Glamorgan, Llan-

gefni in Anglesea, and perhaps Hope, called in Welsh Llangyngar, in Flintshire. He was associated with his nephew St. Cuby in his work.

Just or Iestyn is the name-saint of the two St. Justs. St. Just-in-Roseland, close to his father's castle, was probably his earliest foundation. Then he seems to have gone to Brittany and settled at Plestin between Lannion and Morlaix. One Eflam, an Irish monk, took possession of his cell during his absence and refused to give it up. The saints prayed for a sign from heaven, and agreed that the one on whom the rays of the setting sun, coming through the window, should first shine, should have possession. The light fell first on Eflam, and so St. Just gave way and returned to Cornwall. To this day, though the village is Plestin, which is "Plou-Iestin," St. Just's Parish, most of the associations of the place are of St. Eflam, and his chapel, his well, and his rock are there. After a visit to St. Keverne, which ended, according to the fantastic legend, in a quarrel about a chalice, St. Just probably went to Lafrowda—Lanfrowdow, the *lan* or monastery (or perhaps the *nant* or valley) of the springs—now St. Just-in-Penwith, where possibly he found real pagans to convert, for to this day there is a strong pre-Celtic element in the population of St. Just, Morvah, and Zennor, who were not improbably pagans—perhaps worshippers of the sun and moon at Tregaseal, the Dwelling of the Sun, and Halgolluer, Moonlight Moor, close by—as late as the sixth century.

Caw, the son of Geraint, is called Caw Prydyn, Caw of Pictland. He acquired a kingdom in the North, that is to say in Strathclyde, from which he was turned out by the Gwyddyl Ffichti or Irish Picts. Maelgwn of Gwynedd gave him the district of Twr Celyn in Anglesea. The list of his sons and daughters, counted as one of the Three Saintly Families of Britain, varies from ten to twenty-one. One son was Huail, who was killed by Arthur, another was Gildas, the well-known writer. One daughter, Cywyllog, was the wife of Modred, the



nephew of Arthur, who turned against him and was killed by him at Camlan. Her two sons were killed by Constantine the son of Cador. She founded the church of Llangwyllog in Anglesea.

Cador succeeded his brother Selyf as King of Damnonia. He comes into the Arthurian stories as "Cador of Cornwall." One would like to know who his wife was, for Gildas had a very poor opinion of her, and in his tirade against her son calls her "the unclean lioness of Damnonia," and she may have been the "worthless, shameless woman" (*forwyn ddifwyn, ddiwyl ei deint*) who, according to Gwynfardd of Brecon, ill-treated St. David in Damnonia. Her name is not recorded, but from these two allusions she does not seem to have been a nice person. Geoffrey says that Cador was killed with Arthur at Camlan, but according to another account he seems to have become a monk, and he is counted as a saint.

Constantine, son of Cador, who had been chosen to succeed Arthur as Emperor or King of all Britain on the death of the latter in 537, succeeded his father as King of Damnonia. He does not seem to have held the general overlordship very long, for when Gildas wrote in about 560 he was evidently only King of Damnonia, and Conan of Powys, who is said to have deposed him, is styled "Aurelius," which seems to be taken as the equivalent of *Guledig* or Emperor. He is accused of many iniquities, of which one was the murder of two youths, supposed to be Gildas's nephews, the sons of Modred,<sup>1</sup> in a church. They were probably his rivals in the succession to the crown. Later he was converted by St. Petrock, not to Christianity, for he was a Christian of sorts already, but to a better life, and he became a saint. His original hermitage, with its still existing well, was probably where the ruined

<sup>1</sup> As Modred's wife was Cywyllog, daughter of Cw and sister of Gildas, this would account for the indignation of the latter at the murder

church of St. Constantine stands, in St. Merryn, not far from two of the many churches of St. Petrock, Padstow, and Little Petherick. Probably he also founded in the manor of Trecoit, near to the royal domain of "Kelly-Wik in Cornwall," now Gweek Wood, the church of Constantine, near Helston. Perhaps Strickstenton, formerly Tregustentin, Constantine's town, in Lanlivery, was his, but Constantine, as late as the tenth-century Bodmin Manumissions, was a common name enough in Cornwall. He wandered about in Wales, Ireland, and Scotland, stayed with St. Columba at Iona, and at a great age, somewhere about the year 600, was killed by pirates in Kintyre.

It is not quite clear who succeeded him, but it was probably Geraint II., who may well have been his younger brother, or possibly his son. Constantine was certainly married, for Gildas scolds him for his unfaithfulness to his wife, but her name is not recorded, nor is there any mention of his children.

Geraint II. became King some time after 560. All that is known of him comes into the Life of St. Teilo, the second Bishop of Llandaff. When the Yellow Plague was raging in Britain in the time of Maelgwn of Gwynedd, who died of it about 588, St. Teilo and many of his flock fled to Brittany. On the way they were well received by King Gerennius, as the Life calls him. St. Teilo promised that wherever he might be he would come and give to the King on his death-bed the Body of Christ. When Gerennius was dying St. Teilo heard of it and at once set out for Cornwall, taking with him, floating before the ship—which seems improbable—a large stone coffin. He landed in the port which is called "Dingerein," where he found the dying King and gave him the Viaticum. Then, according to the Life, he buried him in the stone coffin, but according to popular tradition, which, however, may refer to Geraint I., he was buried in Carn Beacon in Veryan in a gold boat with silver oars. The date is given as



seven years and a half after St. Teilo went to Armorica, which would be about 595.<sup>1</sup>

During his reign an event happened which changed the whole position of the British kingdoms. Before this there had been continuous British territory from Strathelyde to Cornwall, formed into the kingdoms of *y Gogledd*, or the North, that is Strathelyde, and probably Cumberland, Westmorland, and Lancashire; Powys, which included parts of North Wales and extended into Cheshire and Shropshire; Gwynedd, the rest of North Wales; Dyfed or Demetia, the western part of South Wales; Morganwg or Gwent, which included Glamorgan and part of Monmouthshire and Damnonia; with smaller principalities such as Erging, Ewyas, Gloucester. Brecon, and the outlying little kingdoms of Elmet and Leodis, in what is now the West Riding of Yorkshire. The kings of these districts, several of which were at times grouped under one king, appear to have elected someone, not necessarily of their own number, as leader, called variously Gwledig, Emperor, Aurelius, Pendragon, or War-Lord (*Dux Bellorum*) and incorrectly described by later chroniclers as Kings of Britain. Among there were Constantine I. of Damnonia, Ambrosius, Uthyr, Arthur, Constantine II. of Damnonia, Conan of Powys, Vortipore of Dyfed, Maelgwn of Gwynedd, Caredig, Brocmail of Powys, Cadvan of Gwynedd, Cadwallawn ap Cadvan, and last of all, Cadwaladr of Gwynedd. The first five of these were of the Royal House of Damnonia, though only the two Constantines were actually kings of that country, but in the middle of the sixth century the power passed from that House and after a short interval came to the House of Gwynedd. The reason is clear enough. From the battle of

<sup>1</sup> The story that Geraint I. was one of the "Three Admirals of the Island of Britain," if founded on fact, would give a reason for burying him in a boat. Boat-burial was not uncommon with Vikings and Norse seafaring men generally, and seems a very natural idea. I am therefore inclined to think that the Corn Beacon tradition really refers to Geraint I., who was the probable founder of Gerrans and Dingerein.

Mons Badonis in about 520, whereat Arthur defeated the Saxons completely, the land had peace for many years. The wars began again in 552, when Cynric of Wessex defeated the Britons at Salisbury, and again in 556 at Beranburh (Barbury Hill near Marlborough), and later, in 571, several towns in the East Midlands, probably isolated fortresses which still held out, were taken. But in 577 came the important Saxon victory of Deorham near Bath, and the fall of the three great fortresses of Bath, Cirencester, and Gloucester, whereby the Saxons reached the estuary of the Severn.<sup>1</sup> Hitherto the history of all the Britons had been in common, but the result of this advance was that the Kingdom of Damnonia was cut off from the rest of British territory and its history is no longer a part of Welsh history, so that from henceforth the Welsh historians have little to say about the Damnonian kings, whose overlordship now came to an end.

The successor of Geraint II. was probably the "Bledericus, Dux Cornubiæ," of whom Geoffrey tells that he joined with Cadvan of Gwynedd and Margadud of Dyfed in intercepting Ethelfrith of Northumbria after his defeat of Brocmail or Brochwael of Powys at Chester and the slaughter of the monks of Bangor Iscoed. The other Britons defeated Ethelfrith and turned him back, but Blederic, who was the leader, was killed. The date is given as 607 or 613. The first battle is mentioned by Bede, with some exultation at the fulfilment of St. Augustine's prophecy, that if the British monks would not join with him in converting the Saxons, they should fall by their sword. The Anglo-Saxon Chronicle also mentions it. Like the Germans that they were, the chroniclers omitted all reference to the later defeat. If Geoffrey were the only authority for the existence of

<sup>1</sup> The Anglo-Saxon Chronicle says that Cuthwine and Ceawlin, Kings of Wessex, slew three Kings of the Britons—Commail, Condidan, and Farinmail—at Deorham. No one of these appears to have been King of Damnonia.

King Blederic, one might take leave to doubt. But there is a better witness. William of Malmesbury mentions a charter recording that a King of Damnonia at the petition of Worgrez the Abbot granted land to Glastonbury Abbey in 601. He evidently could not make out his name, but says that he must have been a Briton, because he uses the British name "Ineswitrin" in the charter. Earlier in his book, when he had been talking about something quite different, he had told how on one of six "pyramids," as he calls them, in the cemetery of the Abbey there was a figure of royal dignity and the letters HER SEXI ET BLISPERH. He had no idea what they meant, but like many mediæval writers in copying from Saxon records and inscriptions he probably misread certain letters. A common error is to write *p* for the Saxon (originally Runic) *w* and *th* (*ƿ þ*), for which either might easily be mistaken. Also it is easy to confuse a Saxon *s* and *r*. Probably part of the inscription was illegible, and in the MSS. we have only the letters which William thought he could make out, without spaces left for omissions. I think it probably read HIC REX I[AC]ET BLIRƿERH (or some similar form), Here lies King Blederic. I think, therefore, that we have here a record that in the twelfth century the monument of Blederic, King of Damnonia, and benefactor of Glastonbury, still existed.<sup>1</sup>

<sup>1</sup> The name of Blederic in various forms, Bleri, Bledhericus, Breri, Bleheris, Bledri, etc., seems to have been not uncommon in connection with Cornwall and South Wales. Thomas, the twelfth-century author of the early Tristan poem, attributes the original romance to one *Breri*. Possibly he is the same as the *Bleheris* of Wauchier de Denain's continuation of the "Perceval" of Chrétien de Troyes, the *Blihis* or *Blehos* *Bleheris* of the *Elucidation* prefixed to the "Perceval," the "famosus fabulator [capital story-teller] *Bledhericus*" of Giraldus Cambrensis, and even the "moult bon clere" *Blaise* of the French "Merlin." The manor of *Treblery* in Davidstowe seems to be called after some Bleri or Bledheric, and there were several Welsh *Bledris*, notably a Bishop of Llandaff in the tenth century, and Bledri ap Cadivor, a South Welsh prince in the eleventh century. The root of the name is probably *blaidh* or *bledh*, a wolf.

From the death of Blederic in 607 or 613 there is a long gap in the list of Damnonian Kings. The Welsh annals through the rest of the seventh century do not mention them at all. The Anglo-Saxon Chronicle and the historians who used it, such as Ethelweard, Florence of Worcester, and Henry of Huntingdon, mention three battles between the Kings of Wessex and the Britons, at Beandune, conjectured to be Bampton in Oxfordshire, in 614, at Bradford on Avon in 652, and at Peonna, probably one of the many places called Penn in Somerset, in 658. In the last the Britons were driven as far as Pedrida—probably the river Parrett, or some place on it. And in 682 “Centwine drove the Britons to the sea.” Then there was peace for a while, but still no King of Damnonia is mentioned by name.

The next King whose name is known is Geraint III., called in the two original authorities for his existence “Geruntius” and “Gerente.”<sup>1</sup> It seems probable that his reign began some time in the late seventh century. Probably also the long peace may have been due to the good offices of one great man on the Saxon side, St. Aldhelm, Abbot of Malmesbury, and later Bishop of Sherborne, a member of the royal family of Wessex. He was on friendly terms with Geraint, and on one occasion made a journey in Damnonia on which he wrote a poem. In 705, by order of a Wessex Synod, he wrote a long letter to King Geruntius, “the glorious lord and swayer of the sceptre of the Western Kingdom, and to all the priests of God dwelling in Damnonia,” to urge upon them the duty of conforming to the Roman Easter. He argues out the question with great skill and at some length, but in a most friendly spirit. Nothing seems to have come of it. The Britons under Wessex conformed—they probably had to—but the independent Damnonians did not.

<sup>1</sup> Ethelweard writing more than two centuries later calls him “Wuthgirete.” He evidently took the “with” of the Anglo-Saxon Chronicle for part of the name.

Aldhelm died in 709. After that there was no one to keep the peace between Geraint and Ina, King of Wessex, and in 710, according to the Anglo-Saxon Chronicle, war broke out. The record is meagre : " And Ine and Nun his mæg gefuhton with Gerente Weala cyninge " (and Ina and Nun his kinsman fought with Geraint King of the Welsh). Florence of Worcester adds, " victumque in fugam vertere " (and put him beaten to flight). Henry of Huntingdon says that " at the beginning of the battle Hige bald the Duke was slain, but at last Geraint and his men turned their faces from the English and fled, leaving arms and spoil to the pursuers." Ethelweard and the Anglo-Saxon Chronicle say nothing about the result of the battle, which in the case of the latter is unusual, if it was a victory, but evidently the Britons were pressed back, for not long after Ina founded Taunton as a frontier town and the Britons seem to have lost all Somerset. According to the Welsh Chronicles the Damnonians received help from Rhodri Molwynog of Gwynedd, and a battle was fought at " Heil " in Cornwall in 721, in which the Saxons were defeated. The Anglo-Saxon Chronicle, which is very like a series of German bulletins, does not mention this defeat. Ina abdicated soon after, and went to Rome, where he died in 728. During the reign of Cynewulf of Wessex, 755 to 784, the Britons were pressed further and further back into Devonshire, though there is no record of the places of battles or of the names of Damnonian kings. In 831 Egbert devastated West Wales from eastward to westward and in 823 there was a battle between the Britons and the Saxons of Devon at Gafulford, which is probably not Camelford, as is usually stated, but Galford<sup>1</sup> in Lew Trenchard in North Devon. The arguments,

<sup>1</sup> *Camelford* might possibly become *Gafulford*, but a change the other way is not probable. Also Camelford, the ford of the Camel, is a Saxon name, which is not likely to have existed in Cornwall in 823. *Gafulford* is what in modern Welsh would be *Galfordd*, fork-road. There are two earthworks at Galford, one certainly British, the other possibly Saxon, where two deep valleys with old roads along them meet in an angle.



which are those of Mr. Baring-Gould, who took me to see the place, seem to me to be quite sound, but are too long to go into now.<sup>1</sup> In 835 there was a battle between Egbert and a mixed army of Britons and Danes at Hengestes Dun, held to be Hingston Down, near Callington. But through all this there is no mention of the name of any British King. Under 875 there is an entry in the *Annales Cambriæ* and the Welsh *Brut y Tywysogion* to the effect that in that year Durngarth or Dwrn-garth, King of Cornwall, was drowned. Local tradition, of what age or value I know not, states that this King held his court at *Lis Kerruyt*, the fortified Court, which we now call Liskeard, and that he was drowned in the Fowey near Red-gate in St. Cleer during a hunting expedition. Richard Carew in his Survey says that he was the son of Caradoc, who was presumably his predecessor. It is also stated that King Alfred visited him as a friend, and this may have been on the occasion of that hunting in Cornwall, when, as Asser tells us, Alfred visited the shrine of St. Guerir the Hermit, where St. Neot's Church now stands, to pray for the cure of his distressing chronic malady. It is quite probable that the stone with its fine Celtic interlaced ornament and the inscription "Doniert rogavit pro anima" in St. Cleer is Durngarth's tomb-stone. It is not far from where he is said to have met his death. There seems to have been peace between the Saxons and the Cornish during the reign of Alfred, who himself owned lands in Cornwall. Probably the British territory extended well into Devon, for in 936 we find that Athelstan drove the Britons out of Exeter and set the Tamar for their boundary. The usual story is that Athelstan subdued and annexed Cornwall, and that Hoel, the last King, submitted, but though there is the foundation charter of Buryan to make the annexation seem probable, I do not think the name of the last King is quite clearly proved. The Anglo-Saxon Chronicle mentions

<sup>1</sup> We picked up several lumps of iron slag in what may have been the Saxon camp.

Huwal King of the "West-Welsh," which usually means the Cornish, among Athelstan's vassal kings, but I am inclined to think that here it means Hywel Dda, the well-known Welsh law-giver, who was King of Dyfed, the west part of South Wales.

In the French metrical romance of Guy of Warwick, the scene of which is laid in the time of Athelstan, there is a Duke Mordred of Cornwall, who accuses Heraud of Arderne of selling Reynbrun the son of Guy, whose guardian he was, to "Russian" pirates. The name is perhaps borrowed from the Arthurian romances, but there may possibly have been a King or Duke Mordred at that time, from whom the various Tremodrets and Rosemodress derive their names. There is a Latin romance of Guy of Warwick by Girard of Cornwall, who also wrote chronicles of the British and West Saxon Kings, now lost.

Later we find King Edgar (957 to 975) setting free serfs at Bodmin and granting land as far west as St. Keverne, so that we must conclude that by the middle of the tenth century the annexation was an accomplished fact, and the Damnonian monarchy which had lasted for some five hundred years had come to an end. Henceforth down to the Norman Conquest there was a succession of Earls of Cornwall with Saxon names of whom not very much is known.

At the time of the Norman Conquest there was an Earl of Cornwall who was said to belong to the British Royal House. His name was Condor or Cadoc, and he had a son called variously Condor II., Cadoc or Caradoc, to whom the earldom is said to have been restored after the attainder of William, son of Robert of Mortain, in 1104. He is said to have lived at Trematon Castle and to have been buried at St. Stephens-by-Saltash. Condor I. submitted to William, but was deprived of his earldom, which was given to Robert of Mortain. Either he or his son had an only daughter, Avicce, Agnes, or Beatrix, who married Reginald Fitz Henry, natural son of Henry I.



Later the earldom was granted to Reginald, as it seems, in right of his wife. They had four daughters. The eldest married Richard de Redvers, the second Robert Earl of Mellent, the third Alan de Dunstanville and the fourth the Vicomte de Limoges. From Richard de Redvers descend the Courtenay family, the head of which is the Earl of Devon, who, supposing that Condor was really the senior descendant of the Royal House of Damnonia, would be the present representative of it. But there is no evidence of that one way or the other, so we need not take it for granted that Lord Devon is *de jure* King of Cornwall. Also the authority for the existence of Condor seems to be no earlier than the late sixteenth-century Camden, who does not say where he got his information.

We find in the fifth and sixth centuries mentions of kings in or of Cornwall, who do not seem to have belonged to the House of Constantine of Cornwall. King Teudar, the persecutor of St. Gwinear, St. Ia, St. Petroc, and St. Kea, is one of these. Gorlois, the first husband of Igraine, the mother of Arthur, is another, and Mark, of the Tristan romance, is a third. I am inclined to think that these were petty chiefs, who were vassals under the Royal House of Damnonia, or they may have been representatives of the original chiefs of the Damnonii, and the Kings of Damnonia may have been originally leaders of the British refugees, expelled from farther east by the Saxon invaders. They have left their mark on the place-names of Cornwall, Teudar at Lestowder in St. Keverne, Gorlois at Treworlas in Breage and Philleigh, and Bosworlas in St. Just, and Mark perhaps in Carnmarth in Gwennap and in Kilmarth in Tywardreath. Mr. Baring-Gould has suggested that Teudar or Tewdrig was Tewdrig Mawr, son of Budic I of the Breton Cornouailles, but I do not see any evidence of this. Mark had a Roman name, and so had his father, called Meirchion, which is Marcian, by the Welsh authorities. Teudar's name is *Theodorus*, a Græco-Latin name, and Gorlois appears to be a Celtic name. All

we know of these Kings is from romances and late lives of Saints, and from place-names. King Teudar in the Cornish drama *Beunans Meriasek*, a late work, but evidently founded on old materials, is made to say to the Duke of Cornwall, with whom he quarrels :—

Mytern Alwar ha Pygys  
 Mytern Margh ryel kefrys  
 Mytern Casvelyn gelwys  
 Gans sokyr thym us ov tos.

King Alwar and Pygys.  
 Royal King Mark also,  
 The King talled Casvelyn  
 With succour to me are coming.

Of these names Mark is perhaps meant of the King Mark of the Tristan story. Casvelyn may be Cadwallawn of Gwynedd, and Alwar's name may be borrowed from that of Algar, the re-builder of the church of St. Petrock at Bodmin, a post-Conquest man, and certainly not a king. Who King Pygys may have been I cannot suggest. Anachronisms matter very little in that drama. The Duke who fights against Teudar, and has Castle-an-Dinas in St. Columb and Tintagel for his castles, is probably Teudar's overlord the King of Damnonia.

The early Kings of Damnonia were certainly, as I have said, Romanised Britons. Gildas, speaking of Ambrosius, who was the son of Constantine of Cornwall, distinctly calls him a Roman, and he, Bede, and Nennius seem to imply that his father was a Roman Consul or even Emperor. I think this is partly a confusion, like that of Geoffrey, between Constantine the usurping Emperor and Cystennin Gorneu, but partly also that *consul* was used by British writers for *comes* or *count*, which was applied by the Romans of the Empire to almost any high official. Be this as it may, we find so many of that House with Latin names that their Romanisation is evident. Those names have been muddled and corrupted

into Welsh forms which transmogrify them more astonishingly than in any other language. Eudaf is Octavius, Cystennin is Constantine, Erbyn is Urbinian, Peblig is Publicola, Ambrosius becomes Emrys, Artorius becomes Arthur, Anthun is Antonius, Dunawd is Donatus, Digain is Deceentius, Geraint is Gerontius, Jestin is Justinus, Selevan is Salomon, the one Bible-name of the lot, though Dewi, which is what the Welsh made of David, was one of the nearly related South-Welsh House. Latin names seem more common than British, and I think it is not improbable, at any rate at the beginning, that the Royal House actually spoke Latin rather than British. Gildas, who was one of them, writes, albeit in a turgid, grandiloquent style, the Latin of one whose own speech it was, not that of one who thought in British.<sup>1</sup> There is a marked difference between his Latin and that, for example, of Adamnan the biographer of St. Columba, a century later. Gradually, no doubt, the language of the less-cultured majority superseded Latin, as English superseded the Court French of the thirteenth and fourteenth century. The result may have been similar too, for there is a strong infusion of Latin in Welsh, Cornish, and Breton, though not so easily recognisable as the French in middle and modern English. Probably the House of Damnonia, which was also that of the Domnonia and Cornubia of Armorica, was more civilised than any of the other British Royal Families and retained a great deal of Roman civilisation for some centuries after it had been wiped out elsewhere by the Germanic invaders. They evidently held a very leading position among the British Kings, until they were cut off from the other kingdoms in 577, and this was probably due to their being more Roman and less barbaric than the rest. This may account for the promi-

<sup>1</sup> Indeed, it has been held that the works attributed to him are forgeries and could not have been written by a Briton. But this, which was the theory, based on internal evidence, of Peter Roberts, a Welshman of considerable learning in the early nineteenth century, has now been given up, and no one doubts the genuineness of the works.

nence given to Cornwall in the Arthurian romances. No doubt in Damnonia Roman towns and country-houses remained habitable until the Wessex invaders destroyed them, and with the houses a good deal of the tradition of Roman life and manners survived. We have evidence that the Britons of Damnonia and South Wales down to a comparatively late date not only hated the Saxons as destructive and brutal enemies, but also looked down upon them as uncouth, dirty people, with no manners. As late as the time of Geraint III., they would, perhaps rather ostentatiously, wash and scour anything that a Saxon had used—plates, drinking vessels, and the like, a thing which astonished St. Aldhelm, who, excellent man as he was, was, after all, only a Saxon, and could not see the point of such fastidiousness. Gradually, no doubt, the Roman civilisation diminished under the German pressure, and the general barbarism overspread Damnonia also, until the Normans came and taught the Saxons manners. The story of the Damnonian Kingdom, if we only knew all its details, would probably prove to be that of the extinction of a higher civilisation by means of a lower, one of the saddest stories in all history, and all the sadder because the extinction was no sudden catastrophe, but a slow and gradual process.

Throughout this paper I have used British chronicles, such as that of Geoffrey of Monmouth, Welsh triads and pedigrees, and Arthurian romances to some extent as if they were genuine history. They are not quite that, for they certainly do contain considerable elements of fiction, but I am convinced that there are in them very valuable foundations of fact, which form a much larger proportion than until very recently it has been the fashion to allow. The danger now seems to be that we should go to the opposite extreme and take them all for gospel. In this, as in most things, *in medio tutissimus ibis*.

# Celtic Words in Cornish Dialect.

BY R. MORTON NANCE.

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ALTHOUGH all Cornish folk retain some shadow of national self-consciousness, the claim of Cornwall to be regarded as a Celtic country must always rest more upon what has been than upon anything that is ever likely to be again. For this loss of a place amongst living Celtic nations we ourselves can take no blame ; but if we feel, as many of us must, a regret that what should have been our own home-language is now lost to us, and perhaps a little shame that our ancestors (in spite of the efforts of those who, before it was quite too late, sought to arouse them) were not to be brought to a sense of its value, it all the more behoves us to guard, with at least the care that such Old Cornish enthusiasts as Gwavas, Tonkin, Keigwin, Boson, Ustick, and the rest, gave to the dying language as they knew it, the far scantier relics of it that remain with us to-day. Here we may well feel that we are performing an act of gratitude to this old group of stalwarts, as well as one of piety to our Ancient British ancestors and one of duty to our descendants, in handing on at least as much as we have traditionally received.

In the names of our home-places, our hills and rocks, our cliffs and beaches, our fields and lanes, we may still clearly hear the voices of our Celtic fathers as they speak to us of the land that they knew and loved so long before it came to our turn to call it home ; but unless we ourselves will be at the trouble of understanding what they say, and of protesting



against any further travesty of their language, the old-people's names, however characteristically Cornish they may sound in our ears, will remain mere sounds, and to those who come after us the sounds themselves must gradually degenerate into mere gibberish. In the interpretation of place-names, alone, lies work enough to keep a Cornish branch of Celtic workers busy for long enough : work, too, that if it is to be well done cannot be long delayed, for pronunciation is very apt to become so altered by shifting of accents and the adoption of English vowels that meaning and melody are lost together. A still more pressing work, however, is to be done amongst those fast-vanishing relics of the old speech that linger as living traditions—of intonation, of even, to a slight degree, the formation of sentences ; but especially of the use of certain words—passed down in the direct line from the Ancient Britons to their descendants of to-day, in the Cornish dialect of the English language.

By far the greater number of these words have by this time been noted and collected by various workers and are already in print. Besides those already recorded, however, there remain, one is certain, many that, in spite of a vitality that has kept them going for at least twenty centuries, must inevitably perish within a very much smaller number of years, unless they should chance to be taken down in the meantime from the lips of the very few old people that now remember them. Like the rarest of our wildflowers, these ancient words are now only to be looked for in unfrequented spots, and they may blossom, in the memory of those who have heard them, only at very rare intervals ; their habitat may have shrunk to the limits of a single parish—even a single house—each word finally ending with a “ Dolly Pentreath ” of its own ; so that, failing the right person, at the right place and moment, ready with pencil and paper to note whatever sounds like a Celtic word, these last remnants are hardly to be saved, and the general Celtic vocabulary must ever remain by so much the poorer.



Not only are there certainly words that still remain to be discovered, but amongst those already collected and printed, given place even in the noble pages of Wright's *English Dialect Dictionary*, there are many that, masquerading as English, or lurking under strange and deep disguises of spelling, are such hard nuts to crack that it is with a certain amount of excitement that, after long guessing and puzzling this way and that, one sees the true Celtic kernel slip out of its shell. Very few indeed probably are the users of these old words who would feel conscious in uttering them that they were to that extent keeping alive the Old Cornish language ; yet it is safe to say that anyone of mature years in West Cornwall must understand from fifty to a hundred of them.—I have myself been able to identify with some certainty as many as five hundred that either are or have been used by English-speaking Cornish folk, with very few exceptions within living memory ; and by including words that for various reasons are doubtfully Celtic this number might almost be doubled.

Generally speaking, these words are not part of the bare medium of intercourse between ordinary people on ordinary occasions, but belong rather to special circumstances and employments. They are the terms used by children in their play ; by their grandmothers, in the capacity of wise-woman skilled in ailments and their cures ; by farmers, miners, or fishermen, and have been kept alive mainly because, in days when our ancestors' one idea of Old Cornish was to shuffle it off as quickly as possible, no English words to replace them were forthcoming. The great majority of them are quite local in their use—communications were not easy in old times ; there was little intercourse even between one village and another, and while to the land-worker both miner and fisherman seemed equally inhabitants of other worlds from his, the fisherman at sea, by a primæval taboo that is not yet entirely disregarded, was prohibited from even the bare mention by its

own name of a land animal. Under such circumstances, it is not to be wondered at that technical terms should have been preserved, one here, another there, and that many living creatures of land, sea, and air should still be known by Celtic names; but besides these we find quite a large number of terms descriptive of human gait, gesture, or character, that by long usage had come to mean so much that no English word was felt to be adequate as a substitute.

A list of five hundred words with their equivalents in Old Cornish, Welsh, and Breton, however interesting to prepare, would prove but dull reading for most; but by culling a few of the more interesting from each section, and quoting no more from other sources than will suffice to show that they are real words, recognized elsewhere as such, it may be possible to occupy a few minutes not too drearily. Let us hear, to begin with, what the Cornish child has to offer—a “composite” child he will have to be, of course, who lives all over Cornwall at once. He is playing a game with pins, which he calls *piddly-mean*, or at Mousehole, in more correct Old Cornish, *pedn-a-meen*, “head and point.” Leaving this, as a St. Ives “quay-boy,” he plays with a *cok-an-baba*, Old Cornish, *cok-an-baban*, a “boy’s boat,” made of cork and chips, in which he fixes a slate-stone to keep it upright. This stone he does not call its “centreboard,” but goes back to days before such new fangles were dreamt of, and calls it the *loo*. Spell this *leu* and you see the Old Cornish equivalent for Welsh *llyw*, rudder. At Mousehole, our boy has forgotten these names, but calls the slate a *tol-a-mean*, which although literally “hole of the stone” means, to him at all events, “stone of the hole.” In playing marbles, again, he uses three terms, at least, that are purely Celtic. “Taking *grydlance*,” at Redruth, is the act of moving a marble to a favourable position—Old Cornish *gruthylans*, a doing, a making; “No *custance* !”, further west, is the cry, “No punishment !”—Old Cornish “*Na cyssythyans* !”—used

when by accident one strikes a partner's marble ; while, as far away from the last haunts of the old language as Polperro, he says, in Old Cornish, "*Sens !* " " Hold ! " when he wishes another player to stop.

Turning now to the old woman—" composite " again—we find that her words are largely descriptive of symptoms and sufferings, such as are to be charmed away by what she calls her *soons*, Welsh *swyn*, a charm. She tells us of the *gozey-gen* and the *gwidgy-gwee*, made famous in a *Randigal Rhyme*, the first of which we find at once in a Welsh dictionary as *gwysigen*, a blister, and with equal ease can trace in Breton and Old Cornish, while the latter with its variant form *gwidgaweeth* is easily seen to be *gudzh-a-gûith*, " blood of a vein," applied to a small black spot caused by a pinch or bruise. Then we hear of the *wonders* or *gwenders*, literally *ewin-rew*, nail-frost, in Welsh also called *gwindraw* ; the *fackle*, an inflammation, Welsh *ffagl*, a flame, the *listing* of which is Old Cornish *lesky*, to burn ; a *botham*, or wheal, the same as Welsh *botwm*, a boss, or *bôthell*, a blister ; a *posh*, not English " pose," a head-cold, but a chest-cold—Old Cornish, Welsh, and Breton *pas*—one such as causes the patient to become *runky* as to voice, Welsh *rhonc*, hollow-sounding. A slight uneasiness in sleep she calls *sissling*, Welsh *sisialu*, to mutter ; an extreme uneasiness is the *hilla*, Welsh *hunllef*, sleep-cry, nightmare, or its lesser manifestation, the *stag*—either an imagined " tie " or " bond " upon one's limbs, Breton *stag*, or the other symptom of nightmare suggested by Welsh *ystagu*, to suffocate.

Passing from nightmare to its causes, the old dame names the *guldize* of the farmer, which looks like Welsh *gwledd ys*, corn-feast, although *guledh* as Cornish exists only on the doubtful authority of Borlase ; the common Cornish name for feast being *goil*, Welsh *gwyl*, preserved by miners in *duggle*, Welsh *dygwyl*, feast-day, and *troil*, Welsh *tra-wyl*, over-feast, which is not to be confounded with another *troil* " a

short sea-trip," Old Cornish *troillia*, to turn. Thoughts of food and its preparation inspire our old woman with many words. She remembers how baking was done by means of *glows*, Welsh *gleiad*, dried cow-dung used as fuel, with which one might get a *broazing* fire, Welsh *brwyd*, hot. If badly baked on this account, the crust would be burnt, while the crumb was "barely *creeved*," Welsh *crif*, raw; or bad flour might produce bread that was unpleasantly *milcy*, Welsh *melus*, sweet, so that one would have to make the most of a *crevan* of the old loaf, Welsh *crafen*, a crust, or the best of its *bruyans*, the crumbs, Welsh *brivion*, fragments. Lacking this, one might either prepare a stew, of the sort called *scably-gullion*, Welsh *isgell-y-golchion*, soup of slops; or bake a cake, called for that reason a *latchet*, in the frying-pan, Old Cornish *letshar*, which in Welsh becomes a ladle, *lletwad*; or make a kidney pudding, called "*linuth* duff," Old Cornish *lonath*, Breton *lonez*, kidney, which, let us hope, would not be boiled to *jowds*, Old Cornish *jot*, Breton *ioud*, Welsh *uwd*, pap. Turning from food to kitchen utensils, the pots—the great "cloamen *buzza*," Old Cornish *buz-seath*, food-pot, and the little *paddick* or pitcher, Breton *podik*, little pot—are quite Celtic, as is the general term for table-ware—*daffer*—which means in Old Cornish "utensil" or "preparation," and has Welsh *dof*, utensil, and Breton *daffari*, to prepare, as relatives. Of basket-ware, we have the fish-wife's *cowel*, Welsh *cawell*, basket, and the home-made *costan*, which, woven of twisted straw on a foundation of split bramble-stems, is like both the ancient straw buckler used in sword-play, Old Cornish *costan*, and the Welsh *costen*, a twig basket. In the *peeth*, Welsh *pydew*, a well, as in the mine-shaft, hangs a *kibble*, which if not a tub, like Breton *kibel*, is at least a bucket.

But we must leave many domestic things unmentioned if we are to glance at other aspects of life as viewed from the Ancient British standpoint; so the old dame who has been showing us round her house now puts on her *gook*, Welsh

*penquwch*, bonnet—a word, by the way, connected with *guwch*, a frown, and our own dialect word *gook*, used of a forward stoop—and gossips of weeds and simples, as she takes us along the lanes. She picks some *scaw*, Welsh *ysgaw*, elder, and points out its unlikeness to the *scaw coo*, woody-nightshade, in Old Cornish *scaw cuz*, wood-elder, and the *scaw-dour*, fig-wort, which has taken the name either of “water-elder” or perhaps that of the ground-elder, in Welsh *ysgaw-y-ddaiar*. Next she shows us how to tell the *keggas*, Welsh *cegid*, hemlock, from the *lizamoo*, which, as it is in English either “cow-parsnip” or “hog-weed,” may in Old Cornish be either *les-an-veugh*, cow-plant, or (as Mr. Jenner has suggested to me) *les-an-moh*, pig-plant. Then there is the smaller umbelliferous plant, with the more-or-less edible root the “earth-nut,” which she calls *kella*, or, adding the West-Country name for “root,” “*killimore*,” Welsh *cylor*, Old Cornish and Breton *keler*. Over the downs we go through the *griglans*, Welsh *gruglwyn*, heath-bush, past the *nekegga*, Welsh *mynocog*, ling, and the *kekezza*, which, as our peculiar Cornish heath, has its peculiar Celtic name, that seems to draw attention to its carnation hue, Old Cornish *kig*, flesh. On the rocks grows *kewny* of various kinds, Breton *kivni*, lichen, and as we get down to the marsh we find the yellow-flowering *laister*, Welsh *elestr*, flags, and by the roadside the strong-flavoured *cassabully*, “winter”—or, as the Old Cornish *casa beler* has it—“nasty” cress.

But now that we are amongst the fields, the farmer joins us, with Celtic words so many that we can hardly take tithe, even, of his store; but, like the gleaners who gather as they go, be content with a modest *tiskan*—Breton *teskaouen*, a gleaner’s sheaf. We note his “arish-mows”—the conical *brummal* in which the sheaves composing it are bound one with another, Welsh *rhwymol*, binding; *amrwymo*, to bind about, and the cylindrical, round-topped mow which, in comparison at least, deserves the name *pedrack*, Welsh



*pedrog*, square, but is better described by the Mid-Cornwall name, *creeg*, Welsh *crug*, a mound or stack. If threshing were done in the old style with a flail or "threshel," as it still is occasionally for grass-seed, we should see the threshel's two sticks, joined with a *keveran*, Welsh *cyfrac*, Breton *kévré*, a leash or bond, and we might see the corn measured in a *crowdy-crawn*, Old Cornish *crodar croen*, "skin-sieve," a sieve-rind with a bottom of sheepskin, used often as a tambourine in the old-folk's dancing days, while the straw might be twisted into rope, of which to make a *mungern* or *munger*, Welsh *mynwair*, a horse-collar. But we have other workers to visit, we must leave the barn with its flying *ushans*, Welsh *usion*, Breton *usien*, husks, chaff, and turn to the mine.

Here, were there time to go underground, we might have, named to us in good Celtic speech, almost every kind of ground that the miner encounters, and many details of his work ; but we can only stay now for a word or two. In *gunnies*, a crevice, we recognise Welsh *gwniad*, a seam ; in *quer*, *quare*, or *cooyer*, we see Welsh *cywair*, a connection, although in Old Cornish it is used of a joint in the sense of separation, rather ; in *slintrim*, a slope, we trace Welsh *ysglent*, a slide. The miner's picks are newly *cossened* with steel at the tip, Welsh *cyduno*, to join in one ; of his timber-work, his *stull* and *sollar* are well known as Celtic ; his *whim*, too, is probably the same as Welsh *chwym*, motion, and I am not at all sure that his *whipsiderry*, even, may not be like Welsh *chwip*, quick, and *sideru*, to twirl.

From the mine we wander down to a Cornish "composite" cove, to find a fisherman of the same kind. Of the sea-words of West Cornwall I have a separate glossary that I hope to see printed one day. Its Celtic words alone, many of them new discoveries, are so numerous that I can do no more than sample them, as I have done with those of the farmer and the miner ; but our fisherman is ready, with the courtesy and



interest that one has learned to expect from him, to help us with his knowledge. He shows us his *gulaneeg*, as, with many a variant, he calls the "hook-rod," Old Cornish *gwialen hig*, with which he catches the cuttle-fish, for which also he has Celtic names; he overhauls his fishing-tackle and shows us the *cobesta*, Welsh *cebystr*, tether, that join his two hooks together—the *cuplaw*, Welsh *cuplau*, couples—to the loop on his lead called a *siggin*, Welsh *syg*, a chain, a trace; his bait he cuts, according to its use, into *skethans*, Breton *skejen*, a slice, or into *trestram*, Welsh *trawsdori*, to cut across; his anchor or "killick," as formerly made at Mousehole, is a stone set in a wooden frame called the *ludras*, perhaps *clut-dres*, "cross-hurdle," the pegs of which are called *kentepathengy*,<sup>1</sup> in Old Cornish perhaps *kentrow aberth an gê*, "pegs belonging to the fence." Stones, again, he uses to moor his fishing-tackle, with the name *mennaz*, or *minys*. *Minys* is plain Old Cornish for "little"; but *mennaz* suggests that the real word is *mean-noz*, "mark-stone." Another stone, this a smooth, bright-coloured one, he holds fast with a rope and plunges into the opening of a seine-net to keep back the fish that try, by a last dash for freedom, to escape the enclosing meshes. This is the *caboolen*, which in Welsh would probably be *cabol vaen*, bright, or polished, stone, but might, on the other hand, be, from its rope, called a "stone of grasping," Welsh *cybol vaen*. Yet another stone was the *meen ollas*, Welsh *maen aelwyd*, hearth-stone, which although no longer used (as in Breton sardine-boats it is yet) as a fire-place, has given its name to the makeshift hearth that may still take the place of the more modern "caboose." Best of all the fisherman's relics, though, is the chant with which he hails his first catch of mackerel—"Breal, e mata, truja, peswartha, pempes, wethes—all serawl, all along the line-o!"—meaning "A mackerel, his fellow, a third, a fourth, a fifth, a sixth—a writhing mass, as far as can be seen!" Here half the words are Celtic; but

<sup>1</sup> The *g* is hard.

perhaps we shall prefer an even shorter cry in which each word is Celtic. It is extremely short—one can make but three syllables of it—but it *is* Old Cornish, of the purest, and is still used, in seine-fishing for mackerel at Mousehole, as the command—"Throw the net!"—"Tol rooz!" This "sentence of spoken Old Cornish," in St. Ives pilehard-seining, is used in the form "*Cowl rooz!*"—"Shoot the net!"—not "shut" it, but "throw it out," I should like to add, in correction of a mistake made in the *English Dialect Dictionary*; "shoot" being pronounced as "shut."

Leaving technical terms, we now get from the talk of our Old Cornish folk some of their Celticisms in which a word has been kept for the sake of its concentrated meaning. Some of these are comparisons, such as—"sweet as *whacca*," Old Cornish *whacca*, sweetest; "dark as *tulgy*," Old Cornish *tulgu*, *tewalgow*, darkness; "shining like *dagwel*," where we may have *teg awel*, fine weather, although *teg houl*, fair sun, seems at least as good; and of a fire, "roaring like *gelvern*," where *gelvern* is evidently for *govel-forn*, "smithy-furnace." Others are terms of abuse—*scudgan*, Old Cornish *caugeon*, Welsh *cachan*, a vile fellow, from *cauch*, dirt; *scroggan*, Welsh *crogyn*, one fit for hanging, from *crogi*, *ysgroggi*, to hang; *piliack*, a poor wretch, literally "one stripped," Welsh *pilio*, Breton *pelia*, to strip, or possibly just "a ragged person," like Breton *pilek*; *cowleck*, a glutton, from *cowl*, Welsh *caul*, maw, still used in Cornwall of a fish-gut, and *tarmenack*, a dawdler, a slow-coach, from Old Cornish *termen*, time.

Two ejaculations that have been handed down in a compacted form as single words are, *Gossabced!* meaning something like "Not I indeed!"—"Not if I know it!"—Dare I suggest *cuth a'm bydh*, "Twill be grief to me"?—and *Dabbety fay!* of which might be made *yu da pegy fé*, "it is good to ask faith"; but, where words have come to this point, it is easy for their would-be translator to make what in the dialect is called a *midge-go-morrah*, or what in purer Old

Cornish is called a *miskemeras*—a mistake, a wandering, and instead of indulging in the *midgetty morrows*, again the same word, but meaning a fit of wandering from the business in hand, I must return for a final glimpse at the animal world.

Here the fish alone are a formidable rank to go through, but I must, I think, give the name *cole*, Old Cornish *collel*, a knife, of the cuttle-fish, called *morgylllell*, sea-knife, in Welsh also, with that of its larger relative the *padulenkan*, meaning in Old Cornish “ink-pot,” from its sepia-squirting powers; of the *silliwig*, as the young—or literally “sweet”—conger is still named at St. Ives; the *pedn-a-borbas*, “bearded-head,” at Mousehole the three, or five, bearded rockling, in whose name *borbas* is the same as *barvas*, the old name of a cod-fish, and the *bothek*, or, as it probably should be, *bochek*, which in Breton, like Welsh *bochog*, means “blubber-cheeked,” for anyone who has caught this fish, the bib or pouting, knows how very blubber-cheeked he becomes on leaving the water. Of bird-names, even, I find fifteen, most of them well known, but some that are of special interest—such as *cresshawk*, Old Cornish *cryssat*, a kestrel, coupled with *tigry*, or *tickaree*, which looks like Welsh *ty*+*curyll*, house+hawk, and seems to be applied to the hen-harrier or to the marsh-harrier. The *dame-ku*, Old Cornish *dama-kioh*, “mother-snipe,” Breton *kioch*, Welsh *giach*, snipe, is another new identification, and I am fairly sure that the redwing’s name, *jennard*, is *iein iar*, “bird of the ice-cold”; for such a term describes perfectly the weather that brings it to Cornwall. Of the lower animals, *bulugan* an earthworm, in Breton *buzuguen*, is a name that although never recorded as Cornish is still known at Mousehole. *Jew*, as applied to the black scarab-beetle, is, I think, a shortened form of *whilan du*, its Old Cornish name; for *whilan* by itself has survived as a dialect word. *Iles*, the name of the liver-fluke, parasitic in sheep, I take to be Welsh *aeled*, ailment, and *bulorn* or *bulhorn*, a snail (which cannot from its accent be “bull-horn,” and

seems too far removed from Old Cornish *melyen* to make that possible either), I am inclined to look upon as an apt although unusual nickname, *bol horn*, in Old Cornish, "iron-belly." More orthodox and self-evidently Celtic than these two or three last guesses is *melwidgeon*, Welsh *malwoden*, Breton *melchoueden*, a snail; a word that was noted by Lhuyd in the seventeenth century as *molhuidzhan*, but which I find was met with as a living word, applied to some particular species of slug, apparently at Redruth, by the late Mr. Thurstan Peter.<sup>1</sup> With which excellent example of the sort of thing that awaits the collector of Celtic survivals in Cornwall, I bring my scraps of Old Cornish to an end.<sup>2</sup> Such a paper as this can but give an inkling of what we hold of our Celtic past in what, even without it, would still be one of the richest of dialects—it can only hint at the closeness of our union in some of our most intimate thoughts with our fellow Celts of Wales and Brittany; but it will, I hope, be enough to convince those who may hear it, that Cornish people, although they may use words that are not obvious English, are not unduly given to inventing a gibberish of their own, and that their "queer" words may well repay a little serious study.

<sup>1</sup> MS. addition to his copy of the *English Dialect Dictionary*.

<sup>2</sup> Proof correction allows me to add here a newly-saved phrase of comfort that, as Miss Milicent Vivian tells me, was used recently to sobbing Gwinear children:—*Tai baree!* or, at length, *Tai baree; sha winnet!* "Hush now; dry (thy) face!" in correct Old Cornish *Taw warre; zeh enep*. [The form *winnet* (for *winnep*) looks as if there may have been a dialect form *gwynep*, nearer to the Welsh *gwyneb* than the usual Cornish *enep*. If the original included "thy," it would be *zeh dha wynep*. It is curious that the archaic word was used for "face," instead of the common late Cornish *bedgeth* or *bejeth*, which is the French *visage*. EDITOR.]

# Ballistic Corrections in Gunnery.

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## INTRODUCTION.

Owing to the confidential nature of the bulk of the detail matter connected with the above subject, I cannot hope to give more than a general impression of the main principles of ballistic corrections applied in modern gunnery.

First, there are the engineers' considerations which have to be dealt with in the construction of the gun, the shape and size of ammunition, etc., but I will leave those to the engineer, and try to give some idea of the corrections which are applied in batteries of heavy artillery when in action.

The object generally in view in gunnery is to destroy the target fired at, and the sooner this is accomplished the more satisfactory is the result, as both time and material are thereby saved. Thus any correction which can be applied before opening fire, that enables the gunner to get his first round nearer the target than otherwise would have been the case, cannot be overlooked: and when we consider that the ballistic corrections applied in heavy artillery often amount to three or four hundred yards' correction to the original range measured off the map, we see the necessity for an accurate determination of the conditions on which the corrections depend.

Even when all corrections have been made and the elevation and deflection for a gun have been decided upon, if,



say, fifty rounds were fired from the same gun, laid identically the same for line and range, the chances are that no two rounds would fall in exactly the same spot. They would all fall round about the target and close enough to be called "hits," but partly owing to slight varying atmospheric conditions met with during the flight and partly to the varying state of the gun and ammunition, their points of impact would vary. Therefore no correction must be omitted which affects the accuracy of fire.

Any solid body in motion in a moving fluid, whether the fluid be liquid or gaseous, has its motion altered by the conditions prevailing in the fluid at the time. Take the case of an aeroplane in flight or a swimmer in the sea. Both must accommodate the course which is steered to the prevailing currents in the fluid in which they are travelling.

And in gunnery, where we have to deal with a steel shell travelling through the air, the prevailing atmospheric conditions materially affect the flight of the shell, and I shall deal with these first.

#### ATMOSPHERIC CONDITIONS.

The chief atmospheric conditions affecting the shell during its flight are: (i.) The state of the wind, (ii.) the barometric pressure, and (iii.) the temperature.

(i.) *Wind*.—The wind is the chief factor to be reckoned with, and both its speed and direction must be known. It will easily be seen that if under normal conditions for wind, that is, a calm, a shot would fall on some particular target, then with a following wind the shot would be carried over the target, and to get the next round on to the target the range would have to be reduced by the amount that the following wind would carry the shot over the target. Thus a following wind necessitates a minus correction for range, that is, reduced elevation on the gun. Similarly a head wind would cause a shot to fall short of the target, and in this case a plus



correction for range would be necessary or an increased elevation put on the gun. A direct cross wind blowing from right to left at right angles to the line of fire would carry the shot to the left of the target, and in order to compensate for this a right deflection would have to be given to the gun corresponding to the distance that the shot would be carried wide of the target.

When the direction of the wind is inclined at an angle to the line of fire, as is generally the case, we get a combination of the above winds. The wind is then resolved into two components at right angles to each other—one along the line of fire and the other across it, and corrections are applied to the elevation and deflection corresponding to the effect on range and line of these two components. Now the shell, especially the howitzer shell, during its flight rises to a considerable height in the air, and consequently the wind which affects the trajectory is not the surface wind, but that prevailing in the higher layers of the air and this wind almost invariably differs from the surface wind. Thus the layer of air in which the shell passes most of its time during its flight has the greatest effect upon it, and the ballistic corrections for wind are based on the velocity and direction of the wind in that particular layer of air.

(ii.) *Barometric Pressure*.—The variations in barometric pressure cause variations in the density of the air, and as the resistance offered to the progress of a projectile by the air depends upon its density, the variations in barometric pressure cause varying degrees of resistance to the flight of a shell.

For example, if the atmospheric pressure be above normal, then the density of the air is greater than normal; hence a shell which would hit a target under normal barometric pressure would, with a higher pressure and a consequent increased resistance to its motion, fall short of the target, entailing a plus correction for range.

(iii.) *Temperature*.—The density of the air is also dependent upon temperature, but in this case, when the temperature is above normal, the density of the air is reduced below the normal density : thus a shot that would score a hit at the normal temperature, would fall beyond the target when the temperature was above normal, necessitating, under these circumstances, a minus correction for range.

As in the case of the wind, the barometric pressure and temperature of the upper layers of air must be used when computing ballistic corrections for these two elements.

#### DAILY VARIATIONS IN THE ATMOSPHERE.

Since the physical state of the atmosphere changes from day to day, and varies considerably throughout the course of any day, it is essential, in order to maintain accuracy of fire in any prolonged shoot, that any variations in atmospheric conditions should be known to the artillery, in order that their corrections may be altered accordingly, and an excellent service is maintained whereby the artillery is supplied at regular hours during the day and night with the latest meteorological data requisite for their ballistic corrections.

#### NORMAL ELEVATION AND DEFLECTION.

Now it is sometimes necessary to engage the same target day after day, say a cross roads where transport is continually passing, or perhaps an enemy battery whose position is known. Then if conditions were all normal, day after day, the angles of elevation and deflection put on the gun to hit the target on any one day would be the same for all days, but as the atmospheric conditions are daily varying, so the elevation and deflection for the same target vary day by day. However, the variation depends only on the variation of the ballistic correction, so that if a target has been successfully engaged and it is required to fire on the same target on subsequent

days, the registered elevation and deflection which gave a hit are noted. Then the corrections for atmospheric conditions for that day are deducted from the registered elevation and deflection, and the elevation and deflection for that target under normal conditions, known as the normal elevation and deflection, is obtained. Thus, on a later date, all that has to be done when engaging the same target is to calculate the ballistic corrections for the day and apply to the normal elevation and deflection in order to get the correct line and range to hit the target under the new atmospheric conditions.

#### OTHER CORRECTIONS.

It is also necessary, especially with guns of very large calibre, to apply corrections for variations in (iv.) weight of shell, (v.) propelling charge, (vi.) wear of gun, (vii.) angle of sight.

(iv.) *Weight of Shell*.—The weight of the shell should be normal, and with the lighter types of ammunition this is generally the case, but owing to difficulties in manufacture, large shells are often just under or over the standard weight and, as the effect of this varying is felt both inside and outside the gun, correction is often necessary.

A shell over normal weight, with a normal charge of cordite behind it, would leave the gun with a reduced muzzle-velocity and so would not attain the same range as a normal shell under the same conditions, thus necessitating a plus correction for range. But outside the gun a shell which is overweight having the same muzzle-velocity as a normal shell would travel further than the normal shell owing to its greater momentum, and on this account a minus correction for range must be applied.

Thus the correction for variation in weight of a shell inside and outside the gun tend to neutralise each other and the two corrections where necessary can be worked from a combined table.

(v.) *Propelling Charge*.—Since the rate at which cordite burns increases with temperature, the explosive power of the charge increases with temperature, hence with the temperature of the propelling charge over normal, the shell leaves the bore of the gun with a greater muzzle-velocity than the normal muzzle-velocity and attains a greater range than it otherwise would do, necessitating a minus correction for range.

As it is impossible to measure the temperature of each individual charge to be used, the cordite is stored in lots, generally in small dug-outs, where the temperature remains fairly constant. This temperature is then taken as the temperature of the "lot" of cordite in that particular dug-out.

(vi.) *Wear of Gun*.—With constant firing and the attendant heating, friction, and corrosive action of the propelling charge, the rifling of a gun becomes worn and this causes a diminution in the normal value of the muzzle-velocity of the gun, as the piece ages, owing to the gases from the propelling charge escaping to the front of the shell and not fulfilling their proper function. Thus the effective range of a gun gradually decreases with age—its age being counted in number of rounds fired—and this decrease must be carefully determined at frequent intervals, for each separate gun and the loss in muzzle-velocity corrected for.

To do this frequent calibrations are carried out on suitable days when atmospheric conditions are as near to normal as possible—that is when corrections other than those due to wear of gun are reduced to a minimum, so that the only real error is the one under consideration, namely, that due to wear of gun. Then, if it is found that in order to hit a target at 8000 yards' range an elevation equivalent to a range of 8500 yards must be put on the gun, the loss of muzzle-velocity is equivalent to 500 yards when firing at a range somewhere in the neighbourhood of 8000 yards, and so the error due to wear of gun is determined for several mean ranges.

(vii.) *Angle of Sight*.—When the foregoing corrections have been calculated, it is still necessary to know whether the target lies in a plane above or below the horizontal plane through the battery position, as elevations given in the range tables are for ranges on a horizontal plane. If the target does not lie on the same contour as the battery, the difference in height between the two is measured from the contours on the map and the angle subtended by this height at the battery (the angle of sight to the target) is obtained. This angle is added to or subtracted from the elevation previously determined upon, according as the target is above or below the battery.

#### LEVEL OF WHEELS AND DRIFT.

Before the introduction of modern sighting arrangements corrections had to be applied for difference in level of wheels, because if one wheel of a gun is lower than the other the shell tends to travel towards the lower side.

Also a correction was needed for “drift,” that is the angle through which the projectile rolls on the air to the right of the axis of the “piece” owing to the rotary motion imparted to it by the rifling in the bore of the gun. Nowadays, however, the new dial sight used in laying the gun automatically compensates for these effects and so obviates the need for initial correction.

#### CONCLUSION.

The foregoing corrections are generally worked out in yards plus or minus and their algebraic sum is applied to the actual range to the target measured off the map, giving the final corrected range to the target. From the range tables the elevation and deflection for this corrected range is given to the guns and they are then ready to open fire. And even then to ensure good shooting it is necessary that each shell is consistently well rammed home, so that there is little variation

in the air spacing in the chamber behind the shell, otherwise slight variations will occur in the muzzle-velocity of the differently rammed rounds with a consequent slight variation in range.

The need for these corrections takes a long time to recount, and it might seem to the uninitiated that there are so many considerations to be noted before a large gun is fired that a good deal of time and patience must be absorbed in their calculation, but with the aid of a range table and a slide rule a few minutes suffice.

Also it might appear that with so many corrections to be applied accurate fire is hardly possible, but it must be remembered that the corrections often have opposite signs and tend to neutralise each other's effect, and it is only when they become cumulative that careful correction becomes necessary, because, much to the gunners' delight, it is not necessary to drop a shell on a pin point, and the destructive power of a large high explosive shell is so extensive that a shot falling several yards from a target may do quite as much damage to the target as a direct hit.



# Notes on the Rainfall of Cornwall.

BY A. PEARSE JENKIN.

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THERE is surely no apology needed for a paper on this subject, even in war time, for the study of rainfall is not the hobby of a few well-meaning but unimaginative cranks, but is of vital importance to our national life and health. Even in war it is of great importance. What would not the Austrians have given to have known more than they did of the rainfall of Italy? Our army has trained meteorologists to advise them, and we have heard that the Germans, with their usual thoroughness, have sixty expert meteorologists on the Western Front, with the result that they are said to be "lucky" as regards weather.

In more peaceful directions the study of rainfall and problems directly connected with it, such as percolation and evaporation, are of great importance in waterworks engineering, mining and other industries.

The investigation of the local conditions in Cornwall is no new study. Robert Hunt in his *British Mining* published in 1884 gives much information about investigations on the rainfall of the county by W. J. Henwood, Davies Gilbert, and others, and on percolation and the flow of rivers,<sup>1</sup> referring to researches dating back to 1796.

For many years past rainfall records have been taken at many places in Cornwall and the results published in *British*.

<sup>1</sup> See W. J. Henwood, "On the Quantity of Water in Cornish Mines." *Trans. Roy. Cornwall Geol. Soc.*, Vol. 5.

*Rainfall*, for which I am indebted for most of the statistical material I have used.

Almost the first thing required in the study of rainfall is to ascertain the average annual fall. This is comparatively simple at a single station, although it takes time, it being considered that thirty-five years is necessary to obtain a true average, and I should be inclined to put it as high as fifty years. To calculate the average rainfall over a large area is, however, by no means so easy, for to estimate the fall per square mile the stations should be fairly close together and at regular intervals all over the area. If reference is made to this map of Cornwall it will be seen that neither of these conditions is satisfied, particularly as to distribution. Moreover, at a great number of the stations observations have only been made for short periods; in some cases for one year only, and it is only by a method of computing the average from neighbouring stations with longer records that this material can be utilised at all,<sup>1</sup> and even as it is the results, though troublesome to calculate, are not so reliable as longer records would be. At the present moment there are only sixty stations for the whole of the County. Then, as to distribution, a glance at the map will show how irregular this is, and it will be noticed that the majority of the stations are on or near the sea coast, and that the highlands of the interior are very badly represented.<sup>2</sup>

Two important results follow from this :—

(1) That as the rainfall on the coast is much less than inland, the actual rainfall of the County per square mile is likely to be underestimated, and this is an important matter, for a difference of 1 inch per square mile per annum would

<sup>1</sup> For further information as to the preparation of a "Rainfall Map," see *British Rainfall* for 1915.

<sup>2</sup> The map of Cornwall to which reference is made was a large one which was shown at the time of the reading of this paper. It has not been thought necessary to reproduce it here. EDITOR.

make a difference of nearly 20,000 million gallons of water a year over the area of the County.

(2) It is obvious that for purposes of water supply what is required to be known is not so much the rainfall in the lowlands at the mouths of the rivers as what falls on the high gathering grounds, from which the rivers and springs are supplied.

So far as mining and china clay works are concerned, the problem is more what quantity of water falls on the area immediately surrounding the works ; what proportion flows away in the rivers ; what proportion is evaporated, and what ultimately finds its way underground to be pumped up again by the mine engines.

For these purposes it is not enough to know the total fall in the year ; it is important to know the monthly falls, for in some investigations I have made on the relation between rainfall and the water pumped from Cornish mines, I find that an excess or deficiency of summer rainfall has no immediate effect on the water pumped, a dry or wet summer making surprisingly little difference. On the other hand, a wet or dry spell in winter is apparent almost immediately in the water pumped. The conclusion I have come to is that, apart from the disturbing action of mineral veins and of cresscourses, most of the water finds its way into mines at comparatively shallow depths ; that, at any rate in areas drained by mines, the " country " acts something like a sponge which in summer is partially dry and absorbs most of the water that comes to it ; but in winter becoming saturated, all the water that gets underground finds its way into the mines.

Water engineers are particularly interested in the amount of the seasonal rainfall, and in the difference from one year to another, especially as this affects the flow of water in rivers and from springs.

It will thus be seen that there are many rainfall problems

requiring solution in Cornwall; there being no records that I know of, of the amount of evaporation or percolation in the County since the time of W. J. Henwood. Records in other parts of the country are of very little use, for the amount of evaporation depends on the climate, and of percolation on the contour of the land, in both which respects Cornwall has very distinctive characteristics.

I propose, however, to-day to confine my remarks more especially to the question of a rainfall map of the County, as this is the foundation for all the other questions, which may be considered some other time.

The present stations in the County are, on the average, one to every twenty-three square miles, or approximately one in the centre of each five-mile square. If they were uniformly distributed the difficulty would not be so great, but they tend to be concentrated near the towns, such as Penzance, Truro, Bodmin, and in the neighbourhood of Plymouth. Even using all the stations shown on the map there are on the north coast some two hundred square miles without a single record; there being no stations between Newquay and Tintagel, and, for the greater distance between these places, for ten miles inland. The present records show a very much worse position, for at many of the stations shown on the map no observations are now being made, such places being shown inside green squares. Eastward of the line Falmouth-Truro-Newquay there is now, with the sole exception of St. Austell, no station till we get to the line Fowey-Bodmin-Tintagel; a strip right across the County nearly twenty miles wide. With the exception of Stannon Clay Works near Camelford and Alternun, there is no record for the whole of the Bodmin Moors. There are only a few stations round Penzance for the whole of the western peninsula; and the high granite lands of Wendron and Constantine are only represented by Pencoys on the extreme northern limit.

It is obvious, therefore, that it is impossible to draw with any certainty the lines of equal rainfall on the map, and consequently, to form any reliable estimate of the rainfall of the County. I have tried to show these lines on the map so far as the material allows, but much of what is shown is almost entirely hypothetical. In such cases dotted lines are shown linking up the isolated sections, to give some indication of the probable course of the lines.

It is much to be hoped that in these badly represented areas people may be found who will make the necessary observations. The work is very simple, and the outfit not costly, even in war time. Observations are usually taken once a day at 9 a.m. In isolated places, which cannot be visited every day, it is very useful to have monthly gauges capable of holding 10 or 12 inches of rain; these need only be visited once a month. For those who are more ambitious, self-recording gauges, showing the actual duration of the rainfall, are very interesting, but they should always be supplemented by an ordinary gauge close by.

I think I have said enough to show the importance and the interest of this work, which the Polytechnic, with its long and valuable connection with meteorology, may, I hope, be relied on to further; I am sure that all the present observers in the County will be glad to give any information or help in their power, and the same may be said, with even greater confidence, of Dr. H. R. Mill, the Director of the British Rainfall Organisation.

## Portrait Gallery.

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- I. THE REV. CANON SALTREN ROGERS, VICE-PRESIDENT, 1868 TO 1870, AND 1883 TO 1885 ; PRESIDENT, 1880 TO 1882.

The Rev. Saltren Rogers was the fourth son of the Rev. John Rogers, Canon of Exeter, a former Vice-President of the Royal Cornwall Polytechnic Society, whose biography, with a short account of his family, appeared in the Report for 1918. He was born in 1823 at Mawnan, and was educated at Blundell's School at Tiverton. He took his degree at Exeter College, Oxford, in 1846, obtaining a first-class in mathematics and a third in classics. He was ordained deacon and priest in the diocese of Lichfield, and was curate of Bakewell in Derbyshire from 1847 to 1849. Then he came to Cornwall, and was appointed by his father "perpetual curate," as it was then called, of Cury and Gunwalloe. This living he held till 1856, when he was presented by the Dean and Chapter of Exeter to that of Gwennap, of which parish he remained vicar for thirty-seven years, until his retirement from ill-health in 1893. For fourteen years he was Rural Dean of Carnmarth, and in 1878 he was appointed by Bishop Benson to one of the first four honorary canonries of the new diocese of Truro. For some years he was an honorary inspector of religious teaching in the Church schools of the diocese and an examiner in the same subject of pupil teachers and of the Truro Training College for school mistresses. On his retirement he went to live at Tresleigh, St. Austell, where he still continued to work, as far as his health allowed. In 1904 he removed to Bath, where





THE REV. SALTREN ROGERS, M.A.,  
Hon. Canon of Truro.  
President of the Royal Cornwall Polytechnic Society,  
1880 to 1882.



he died on the 5th February, 1905, and was buried in the Lansdowne Cemetery of that city.

Canon Rogers took an active part in the work of the Royal Cornwall Polytechnic Society, of which he became a member in 1867. He was elected Vice-President in 1868 and again in 1883 and President in 1880.

His Presidential Addresses were chiefly descriptions of the principal contents of the exhibitions which took place during his term of office, except the last, which was a very interesting account of the work of the Society during the first fifty years of its existence. He does not appear to have contributed any other papers to the Reports.

He was also a member of the Royal Institution of Cornwall. He was one of the founders and a valuable supporter of the Miners' Association, of which he was President in 1876 to 1878, and was a member and a frequent attendant at the meetings of the British Association. He was a man of considerable scientific attainments, and took every advantage of the peculiar opportunities afforded by his parish to acquire a great knowledge of mineralogy and geology. His fine collection of minerals, many of which had been sent to him from time to time from abroad by Gwennap men who had gone mining in foreign parts, was presented by him to the Hunt Museum at Redruth. He was also a botanist of considerable attainments. While he was at Cury he made a special study of grasses, and made microscopic etchings of a collection of them. He was President of the Cornish Moneywort Club, a botanical society of some note in its day.

But it is as a parish priest that he will be most remembered. He came in 1856 to what must have been a somewhat difficult parish. It was almost entirely given up to mining, its mines were in full work, and a mining population is by no means the easiest to deal with. No doubt Dissent was strong in the district which contains one of the sanctuaries of Non-conformity, Gwennap Pit. It is also probable that the parish

had not hitherto been particularly well worked, for the years before 1856 were anything but a strenuous period in most parishes. Mr. Rogers encountered some amount of opposition at first, as was usually the fate of hard and enthusiastic workers in days when *quieta non movere* was the maxim of the ordinary man, especially in Church matters ; but he soon overcame it, and his thirty-seven years of parish work have left behind them a memory which will not easily be effaced. He gradually restored the church at considerable expense, established a mission chapel in the outlying hamlet of Carharrack, brought the school to a high state of efficiency, and instituted many other religious influences in his wide and populous parish. It has been said of him that " he took an intense interest in the moral, intellectual, and spiritual life of his people," and his zeal for education and his influence over men, and especially over young men, were marked characteristics of his work. His character and the effect of his work may well be summed up in the words of a letter written on the occasion of his death to one of his children. The writer, who had evidently come very much under Canon Rogers's influence, has since passed away, after attaining to considerable distinction in his own botanical line. He says : " Yours is the loss of a father and mine the loss of one who was my ideal in every phase of his many-sided life, and whose saintly counsels have largely helped to mould my life. . . . There are many like myself who will ever thank God for the consecrated life of your father, and who because of that life and contact with it have obtained clearer visions of the Eternal and loftier conceptions of duty."

Canon Rogers did not leave much printed literary work. The following seem to be all his publications :—

Sermon preached at Mawgan Church on the death of the  
Rev. Gerard Mann. 1855.

Sermon on Church Restoration. Truro, 1869.





LEONARD HENRY COURTNEY,  
Lord Courtney of Penwith.  
President of the Royal Cornwall Polytechnic Society,  
1889 to 1891.



Minutes of Proceedings of the Kirrier Ruridecanal Synod.  
Helston, 1853.

“ Notes on a Remarkable Thunderstorm in West Cornwall, August 14th, 1871,” *Collins’s Western Chronicle of Science*, I, pp. 131–5.

From the *Report of the Miners’ Association of Devon and Cornwall* :

“ Examination in Science,” *Report*, 1864, pp. 22–3.

“ On the Work of the Miners’ Association,” *Report*, 1868.

Speeches at Annual Meetings, *Reports*, 1876, 1877.

From the *Reports of the Royal Cornwall Polytechnic Society* :—

Inaugural Addresses, *Reports*, 1880, p. 22 : 1881, p. 18 ; 1882, p. 26.

• Mr. Saltren Rogers married on 15th December, 1856, Julia Lucy, daughter of the Rev. Horatio Mann, and had three sons and five daughters.

## II. LEONARD HENRY COURTNEY, LORD COURTNEY OF PENWITH, VICE-PRESIDENT, 1880 TO 1882 ; PRESIDENT, 1889 TO 1891.

Leonard Henry Courtney was born at Alverton House, Penzance, on 6th July, 1832. His father was John Sampson Courtney, manager of Bolitho’s Bank at Penzance, and his mother was Sarah, daughter of John Mortimer, of Scilly. They had five sons and three daughters. Of the sons two, Richard and John Mortimer, are still living. The former, who has recently retired from a position in Barclay’s Bank, which succeeded the bank of which his father was manager, lives at Penzance, and the latter, who is a C.M.G. and was Deputy Minister of Finance and Receiver-General of the Canadian Treasury, in Canada. William Prideaux Courtney, another of the sons, was a distinguished bibliographer, and was for nearly fifty years a constant frequenter of the Reading

Room of the British Museum, where he was a general favourite, and made many friends among the staff, of whom the present writer may claim to have been one. His great bibliographical knowledge was always at the service of anyone who chose to ask him for information, and he was often able in an unofficial and informal way to make himself very useful to the librarians. His best-known work was (in collaboration with the late Mr. G. C. Boase) the *Bibliotheca Cornubiensis*, published in 1874 to 1883, a very complete bibliography of works by Cornish writers or relating in any way to Cornwall, with short biographical notices of the writers. He died in 1913. Another son, James, was a captain in the merchant service. The three daughters, Miss M. A. Courtney, Mrs. Julyan, widow of Mr. W. H. Julyan of Penzance, and Mrs. Oliver, widow of the Hon. Richard Oliver of the New Zealand Legislative, are still living. The late W. P. Courtney once told the present writer that the family was a branch of the great Norman house which spells its name "Courtenay" and is now represented by the Earl of Devon.<sup>1</sup>

Leonard Courtney was first educated at the Regent House Academy at Penzance under Mr. Richard Barnes, but later under the private tuition of Dr. L. R. Willan, who had the highest opinion of his capabilities. For a very short time he was a clerk in Bolitho's Bank, but at the age of nineteen went up to Cambridge, to St. John's College, of which he later became a Fellow, and later still an honorary Fellow. He went out as Second Wrangler in the Mathematical Tripos of 1855, and was bracketed equal with the Senior Wrangler as Smith's prizeman, a success which ought to have satisfied anyone; but a story is told of his rushing off with the news to his old tutor, Dr. Willan, and being met with the disconcerting answer, "I'm disgusted with you; you ought to have been Senior

<sup>1</sup> The arms of Lord Courtney, as given in Debrett's Peerage, are evidently a variant of those of the Devon Courtenays, with additions, probably suggested by Cornish patriotism.

Wrangler." In 1858 he was called to the Bar by Lincoln's Inn, but though he became a Bencher of his Inn in 1889, he does not appear to have ever practised as a barrister, devoting himself rather to journalistic and literary work. For some time during the sixties he was an examiner in English history, language, and literature for the Civil Service of India, and in the Thirteenth Report of the Civil Service Commissioners (1868) a remarkably clever and very stiff paper of his on English history appears among the specimen papers of the examination of April, 1867. In about 1863 he joined the staff of *The Times* newspaper and was for many years a regular leader-writer and contributor. From 1872 to 1875 he was Professor of Political Economy in University College, London, and this was really the subject to which he was most deeply attached, and to the problems of which he devoted most attention. In 1875 he resigned his professorship and paid a visit to India, and on his return contested Liskeard for Parliament with Mr. Horseman. He was unsuccessful, but only by five votes, and in December, 1876, after Horseman's death, he was elected and continued to be member, first for Liskeard and later for the Bodmin Division of Cornwall, until 1900, when he did not offer himself for re-election. He entered Parliament as a Liberal of the old philosophical, economic, individualist school, the school of Mill and Fawcett, which its opponents on both sides stigmatised as "doctrinaire." He made his mark at once, taking what in the seventies was looked upon as the extremest Radical side on almost all questions, and to these principles he adhered for the whole of his long life. He was an effective, if rather a rugged speaker, and was soon recognised as a high authority on financial and economic subjects. When Mr. Gladstone came into power in 1880 he was made Under-Secretary for the Home Department, and later, in 1881, Under-Secretary for the Colonies. In 1882 he received the very important appointment of Financial Secretary to the Treasury, but in 1884 he resigned his place, because Mr. Glad-

stone's Reform Bill of that year contained no provision for Proportional Representation. This method, designed to ensure the fitting representation of minorities, was taken up by Mr. Courtney with the enthusiasm which he imported into everything that he undertook, and he never ceased to advocate it for the rest of his life. This is not the place to discuss its merits, but the present writer after a conversation with him on the subject—for he would discourse on it to anyone, however unimportant politically—came to the bewildered conclusion that it was a mathematical puzzle only suitable for an electorate consisting entirely of high Wranglers. When in 1886 Mr. Gladstone declared for Home Rule for Ireland, Leonard Courtney, much to his astonishment, refused to join him, and became one of the new Liberal Unionists and a most uncompromising opponent of Home Rule; but, unlike many of that party, he did therefore not cease to be a Liberal. Henceforth, though he for some time gave a general support to the Unionist Government, he became a good deal of a free lance, as indeed he had always really been. From 1886 to 1892 he was a very efficient Chairman of Committees and Deputy Speaker, and in 1895, on the resignation of Mr. Peel, was suggested as Speaker, but declined to allow his name to be put forward. Though he was re-elected in 1895 for the Bodmin Division, it was by a much reduced majority, for the Unionist party had by this time become frankly Conservative, and he was rapidly drifting away from them on everything except Home Rule. He advocated the evacuation of Egypt and strongly opposed the forward movement on the Nile and, when the South African War came, he took strongly the side of the Boers and identified himself with Stead's "stop the war" agitation. This was too much for his constituents, proud as they had always been and still were of his great attainments and his unquestionable integrity, and he was very naturally not selected by the Unionists as their candidate at the election of 1900, and would not stand as an

independent Liberal. Thus ended his career in the House of Commons, not so much in failure, as because it was no place for a man who must needs be always in a party of one. On his retirement from public life he devoted himself to literature for a time and produced in 1902 a really fine, if rather heavy, book, *The Working Constitution of the United Kingdom*. In 1906, after the return of the Liberals to power, he at once received a peerage and found with it his most fitting place, the cross-benches of the House of Lords. Strange to say, he completely changed his views on Home Rule, and came at last to the conclusion that it might now safely be conceded to Ireland. When the Great War had been going on for a very short time he was one of the few peers who believed that it could only end in a "draw," and advocated a peace by negotiation as the only way out of it. The enemy appeared to derive some slight satisfaction from his utterances. But his last political controversy was not "pacifism" but "P.R.," and this he advocated on all possible occasions by speeches, letters to *The Times*, and conversations, which were always of great force and interest, though they were not always convincing.

Lord Courtney was undoubtedly a many-sided man. Though he was an expert and took an absorbing interest in economics and finance and kindred matters, which, useful though they may be, represent to many of us the most hopeless dullness and boredom, he was almost as good an authority on history, literature, and art, an excellent all-round scholar, and a most interesting talker on almost any subject when he liked his company; but it is said that he could be anything but pleasant when he did not. He had too much honesty and integrity to be a politician, but was too individualistic and uncompromising to be really called a statesman. Altogether he held a unique position in the political world for the whole of his long career, and left behind him an unblemished record even with those who utterly disagreed with his views.



Lord Courtney was a most patriotic Cornishman. He knew his native county from one end to the other, and is said to have commonly boasted that there was not a single church in Cornwall which he had not visited and examined. Nor was this prophet without honour in his own county, for besides representing a part of it in Parliament for a quarter of a century, he was also a past President of the Royal Cornwall Geological Society, the Royal Institution of Cornwall, the Royal Cornwall Polytechnic Society, and the Penzance Natural History and Antiquarian Society. He was also a valuable member of the Penzance Library, in which he took a great interest and to which he made many important donations, the most noteworthy of which was his annual gift of the reports of the Historical Manuscripts Commission.

Leonard Henry Courtney married in 1883 Miss Catharine Potter, daughter of Mr. Richard Potter, and sister of Mrs. Sidney Webb. He died at his house at 15 Cheyne-Walk, Chelsea, on the 11th May, 1918, in his eighty-sixth year, and, as he left no heir, the peerage became extinct.

III. THE RIGHT REV. WILLIAM BOYD CARPENTER, LORD BISHOP OF RIPON (1884 TO 1911), CANON OF WESTMINSTER (1911 TO 1918). PRESIDENT, 1904 TO 1906; VICE-PRESIDENT, 1907 TO 1909.

William Boyd Carpenter was born at Liverpool on 26th March, 1841. He was the son of the Rev. Henry Carpenter, vicar of St. Michael's, Liverpool. His mother was Hester, daughter of Archibald Boyd, and sister of the late Canon Boyd of Exeter. He was educated at the Royal Institution School at Liverpool, and later, as a scholar of St. Catharine's College, at Cambridge, where he took his degree as a Senior Optime in the Mathematical Tripos in 1864. In the same year he was ordained deacon by the Archbishop of Canterbury (Longley) and licensed to the curacy of All Saints, Maidstone, where he remained until he had received priest's orders in the following





THE RIGHT REV. WILLIAM BOYD CARPENTER, D.D.,  
Lord Bishop of Ripon.  
President of the Royal Cornwall Polytechnic Society,  
1904 to 1906.



year, shortly after which, in 1866, he removed to St. Paul's, Clapham, where he was curate for about a year. In 1867 he became curate of Holy Trinity, Lee, near Blackheath, where he remained until in 1870 he was presented to the Vicarage of St. James's, Lower Holloway. Here he might have remained for a very long time, but for a curious accident, which made all the difference to his career. As the writer of this biographical notice is perhaps the only survivor of the very few who knew the story, which Bishop Boyd Carpenter himself probably never did, there is no harm in telling it. Mr. Carpenter when he went to Holloway, though only twenty-nine years of age, had already become a very fine preacher, but he was never the sort of man to push himself, and his parish, in a rather inaccessible and anything but fashionable suburb, was chiefly inhabited by people of the lower middle class, who were not at all of the sort to appreciate his refined and scholarly eloquence at its full value. Indeed, as the present writer can testify, his church did not fill, and his preaching was a good deal thrown away upon his congregation. This church, an ugly eighteenth or early nineteenth-century building with high pews, galleries, a "three-decker" pulpit and reading-desk and no pretensions to architecture or ornament, was not the place to attract visitors from other parts, and the services, except for his reading and preaching, were not attractive either, being of the old-fashioned "Low Church" variety. There seemed to be no reason why he should ever become known to the world outside his own parish, and he might almost have considered himself shelved. But it happened that in the year of his appointment a stranger of some note came to live in his parish, though not to be a member of his congregation. This was the late Very Rev. Edward Knottesford Fortescue, who had been Provost of St. Ninian's Episcopalian Cathedral, Perth, and a very leading member of the extreme High Church party. He had recently married a second time, and he and his wife had reverted to what had

been the religion of his family until the time of his great-grandfather, and had become Catholics. He took a fancy to the rather nice little church of the Sacred Heart in Eden Grove, Lower Holloway, and went to live in a charming old house with large garden close by it. George Fortescue, one of his sons by his first marriage, who had recently become an Assistant Librarian in the British Museum—he died in 1912, Keeper of the Department of Printed Books—frequently spent Sundays with his father. Being a member of the Church of England, he used often on these occasions to attend the nearest Anglican Church, which happened to be St. James's. He was quite young at that time, but he was a man of great intelligence, and, whatever might be the case with the rest of the congregation, thoroughly appreciated the excellence of Mr. Carpenter's preaching, which as to voice, manner and matter afforded him an intellectual treat. Now it happened that his mother had been a sister of Mrs. Tait, the wife of the then Archbishop of Canterbury, and George Fortescue and his brothers and sister were on very friendly terms with the Archbishop and his family. One day when he was at Lambeth he spoke very enthusiastically to the Archbishop about Mr. Carpenter's preaching, and Tait, who did not appear to have ever heard of him before, was sufficiently impressed by his nephew's enthusiasm to suggest that he ought to be asked to preach at Lambeth. This was done, and Mr. Carpenter acquitted himself so well that from thenceforth his exceptional preaching powers were fully recognised. This must have been in about 1873, and in 1875 he was invited to be Select Preacher before the University of Cambridge, an unusual honour for so young a man. He was again Select Preacher in 1877 and Hulsean Lecturer in 1878, his subject in the latter case being "The Witness of the Heart to Christ." Archbishop Tait spoke of his preaching to Queen Victoria, who invited him to preach before her. She took a great fancy to him and there began a great friendship between them, which lasted for the

rest of the Queen's life. In his autobiography, *Some Pages of My Life*, he has a good deal to say about the Queen, and his extracts from her letters to him show very clearly that his sympathy must have meant very much to her.

Though it is hardly credible that so great a preacher would have always remained unknown in any case, the early recognition of his powers was undoubtedly due to the accidental circumstances just related. The facts were told at the time by George Fortescue himself to the present writer, who happened to be an old schoolfellow and great personal friend of his. Probably the only other person who knew of them was Archbishop Tait.

In 1879 Mr. Carpenter became vicar of Christ Church, Lancaster Gate, the large (and at that time fashionable) church with a great spire to it, which is so much in evidence on the north side of Kensington Gardens. In the same year he was appointed honorary chaplain to the Queen, and in 1882 he became a Canon of Windsor and Chaplain in Ordinary to the Queen. In 1883 he was Select Preacher before the University of Oxford. In 1884 he was appointed Bishop of Ripon and consecrated in Westminster Abbey on July 25th. There he remained until his resignation in 1911, when he became a Canon of Westminster. Though in a very gratifying letter on his appointment to the See of Ripon Queen Victoria expressed her regret that he would be no longer near her at Windsor, and that "a dignitary of the Church is not in the same position as a canon," he still continued on the same terms of sympathy and friendship with her. He was also on very friendly terms with the Empress Frederick, for whose character and abilities he had a great admiration. Shortly before her death he and his wife visited her at Friedrichshoff, and it was in accordance with her wish that he read the English service at her funeral.

In 1887 Bishop Carpenter preached the Jubilee sermon before the House of Commons at St. Margaret's, Westminster.

In 1889 he was Bampton Lecturer at Oxford, his subject being "Permanent Elements of Religion." In 1895 he was Pastoral Lecturer on Theology at Cambridge and in 1904 he was Noble Lecturer at Harvard University, U.S.A. Twice was he President of the Church Congress, at Wakefield in 1886 and at Bradford in 1898.

He received many University honours, being Hon. D.D. of Glasgow and Aberdeen, Hon. D.C.L. of Oxford and Durham, and Hon. D.Litt. of Leeds. He was also a Knight of the Order of the Royal Crown of Prussia. Since 1903 he had been Clerk of the Closet to Kings Edward VII and George V, an office which corresponds to the King's Confessor of olden times.

In 1903 the Bishop, finding the winter climate of the North somewhat trying to him, bought as a winter residence Trevisson, on the Flushing side of the Penryn Creek. He became a member of the Royal Cornwall Polytechnic Society at once and was elected President at the Annual General Meeting of February 9th, 1904. At the opening of the sixty-ninth Exhibition on August 16th, 1904, he gave an inaugural Address on "Individuality in Art," and at the evening reception of the same day another on Gounod's advice to a pupil, "Be always wider than your vocation." At the autumn meeting of November 3rd, 1905, he gave an Address on "Science as applied to the Problems of Everyday Life," and on the following day at the opening of the Public Subscription Library at the Polytechnic Hall another on "The Right Use of Literature." He was unable to be present at the Summer Meeting and Exhibition on September 4th, 1906, so these were all of his Addresses. Only abstracts of them appear in the Reports for those years, and it is probable that these hardly do them justice, for there is no doubt that they were highly appreciated by those who heard them for their eloquence, good sense and humour. During his Presidency he took an important part in the management of the Society.



Soon after his term of office was over he left the Falmouth neighbourhood and took a house called Riversea, at Kingswear, on the River Dart. He came there at first for occasional holidays, but after his resignation of his See he was able to spend much of his time there, for the duties of a Canon of Westminster are not arduous and allow for a good deal of spare time during the year. He was fond of going about on the river in his launch, he took great interest in local affairs, such as the Dart Yacht Club, parish affairs, and local charities, and greatly endeared himself to the people of the district.

Bishop Boyd Carpenter was essentially a great preacher, but he was also a man of affairs, as the management of his diocese showed. But he was something of a writer as well, chiefly of religious and devotional works. In 1879 he published a *Commentary on Revelation*, and later several other works on the Bible or parts of it, *Thoughts on Prayer* (1871), *Lectures on Preaching* (1895), *Christian Reunion* (1895), *The Religious Spirit in the Poets* (1900), and several others, a complete list of which may be seen in *Who's Who?* Probably he might be described, at any rate in the earlier years of his ministry, as an Evangelical Churchman with a tendency to "Broad." Besides his religious and theological attainments, he was also a considerable Dante scholar and had a fine collection of Dante literature.

William Boyd Carpenter married first, in 1864, Harriet Charlotte, daughter of the Rev. J. W. Peers, of Chiselhampton, Oxfordshire, and secondly, in 1883, Annie Maude, daughter of W. W. Gardner. He had five sons and six daughters. His youngest son, Douglas Boyd Carpenter, was killed in France. After the death of the Bishop's second wife and his son, his widowed daughter-in-law kept house for him and devoted herself to the care of him. He died at the Little Cloisters, Westminster, on October 26th, 1918, and was buried in Westminster Abbey. A few hours before his death he sent to the King the message, "As I pass, I give you my loyal love."



2  
REPORT

OF THE

Observatory Committee

OF THE

Royal Cornwall Polytechnic Society

WITH

METEOROLOGICAL TABLES

AND

Tables of Sea Temperature,

FOR THE YEAR 1918,

BY

WILSON LLOYD FOX, F.R. Met. Soc.

*(Hon. Sec. Observatory Committee),*

AND

JOSHUA BATH PHILLIPS, F.R. Met. Soc.,

*Of the Meteorological Office Weather Station, Falmouth.*

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FALMOUTH :

Printed by J. H. LAKE & Co., Market Strand.

—  
1919.



REPORT  
OF THE  
OBSERVATORY COMMITTEE  
OF THE  
ROYAL CORNWALL POLYTECHNIC  
SOCIETY  
FOR THE YEAR 1918.

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COMMITTEE :—

Mr. H. DYKE ACLAND,  
F.G.S., F.S.A.

Capt. ARTHUR ROGERS,  
R.N.R., J.P.

Mr. HOWARD FOX, F.G.S.

Mr. WILSON LLOYD FOX,  
F.R. Met. Soc., J.P., *Hon. Sec.*

Major LUARD, R.E.

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The maintenance of the Observatory and garden has received due attention during the year.

The sum of £28 16s. 2d. has been received from the Meteorological Office, in addition to the annual grant of £30, for the year ending 30th June last.

Mr. P. Y. Alexander, F.R.G.S., continued his use of the Observatory sitting room until 12th June, from which date Mr. R. E. Watson, B.Sc. (2nd Lieut., late R.G.A.), has

been in almost continuous residence, and at times with his wife and child.

The Treasurer, Mr. W. W. J. Sharpe, has furnished the annual account for the year ending 30th June. This has been audited by Messrs. H. B. Carlyon and E. P. Kestin, to whom your thanks are due.

Your Committee expressed their appreciation of the efforts being made to establish a University in the South-West, through their chairman, Mr. H. Dyke Acland, who signed the memorial presented to the President of the Board of Education towards the end of the year.

Captain W. J. Andrew, of the tug "New Resolute," has continued the Sea Temperature Observations, which, during recent years, have been taken near the centre of the Harbour. The usual tables, and meteorological notes by your Honorary Secretary, will appear in the annual report. Through the courtesy of the Meteorological Office, tables of Temperature, Humidity, Pressure, Cloud, Bright Sunshine, Wind and Rainfall, by Mr. J. B. Phillips, F. R. Met. Soc. (Staff Clerk at the Observatory), will also be published in the report.

WILSON LLOYD FOX,

*Hon. Sec.*



# METEOROLOGICAL NOTES, 1918.

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PRESSURE.—The mean for the year was 1016·4 millibars (30·016 mercurial inches), which is 1·3 mb. (.038 ins.) above the average of the forty-five years, 1871-1915. The maximum, 1047·2 mb. (30·923 ins.), was recorded at 10 p.m., of the 25th of February. There have been four previous higher readings, all of which occurred in the month of January, viz., in 1882, 1896, 1902 and 1905. In the last-named year it was 1053·0 mb. (31·093 ins.), which is the only time since 1871 when the barometer has risen above 31 inches. The minimum, 976·2 mb. (28·829 ins.), was registered on the 2nd of November.

TEMPERATURE.—The mean for the year was 51·4°. That for February was 46·8°, which is the highest recorded with the exception of February, 1897, when it was 47·6. September had a mean temperature of 55·9°. This is the lowest recorded for that month; the previous lowest having been 56·4° in 1910. December gave the high mean of 48·2°, comparing with 48·6° in 1900, 48·7° in 1912, and 49·0°, the highest recorded, in 1898. The extreme maximum for the year was 75·9° on the 1st of July, whilst the extreme minimum was 25·0° on the 5th of January. The following exceptional readings occurred: Maximum in March, 61·4°; in April, 65·4°; high minima of 33·8° in February, 42·6° in May, and of 36·0° in December. Low minima in July 46·0°, and in November 29·6°.

RAINFALL.—The total for the year was 1132·0 mm. (44·57 ins.), which was 30·3 mm. (1·19 ins.) less than the average. From January to June 379·6 mm. (14·94 ins.) fell. From July to December it was 752·4 mm. (29·62 ins.), nearly double that of the first half of the year. The months of March, April, May and June were exceptionally dry, the total rainfall being only 151·7 mm. (5·97 ins.). This is in striking contrast to the heavy downpour of September, 211·9 mm. (8·34 ins.), and of

December, 210·7 mm. (8·30 ins.), respectively. The September fall was the greatest experienced at Falmouth since 1871. It was 127·6 mm. (5·24 ins.) above the mean for that month for the forty-five years 1871 to 1915, and 39·7 mm. (1·56 ins.) above the next highest for that period, 172·2 mm. (6·78 ins.), which occurred in 1885. Rainfall Observations, taken by Mr. Lovell Squire, at Ashfield, near Falmouth, from January, 1835, to June, 1837, and at Kimberley Place, Falmouth, from July, 1837, to December, 1857, show the fall to have been exceeded in September, 1841, when 216·2 mm. (8·51 ins.) fell. The rainy days for the year numbered 203, which is four less than the average. The months which had four or more days below the average were March, with 10 against 18; May, 8 against 13; June, 9 against 14; and November, 15 against 19. Those above the average were September, with 26 against 16; October, 26 against 20; and December, 31 against 22. There was a partial drought from 16th May to 13th June inclusive, during which the average daily rainfall was 0·25 mm., or less than 0·01 in.

**BRIGHT SUNSHINE.**—The total number of hours was 1752·0, being a daily average of 4·8 and 12 hours below the mean. June was the brightest month, and had a daily average of slightly over 9·5 hours. The least sunny month was February, which had a daily average of only 1·6 hours. The greatest amount on one day was 14·9 hours in July. There was some sunshine on every day during March, and on 29 days in June, but on only 18 and 19 during February and December respectively. June had the highest percentage of possible duration, viz., 59, and February the least, viz., 16. The number of sunny days was 305. This is the same as the average of thirty-five years, 1881-1915.

**WIND.**—The maximum average hourly velocity during one hour was 26 metres per second (58·2 miles per hour), which occurred at 4 p.m. on 20th January, and again at 4 a.m. on 2nd November. The maximum gusts during these "whole gales" were 34 m.p.s. (76·1 m.p.h.) at 4.25 p.m. on 20th January, and 35 m.p.s. (78·3 m.p.h.) at 3.45 a.m. on 2nd November.

# FALMOUTH SEA TEMPERATURES.

The Observations have been taken by Captain Andrew, of the tug "New Resolute," near the centre of the Harbour during 1918. They have been compared with the mean and extreme values of the readings of maximum and minimum thermometers for the same days of each month at Falmouth Observatory. These thermometers are divided on the stem and verified and placed in a Stevenson Screen, at a height of four feet over grass.

1918.	Number of Daily Observations.	Means.	Mean Difference from Air.	Maximum.	Difference from Air.	Minimum.	Difference from Air.	Monthly Range.	Difference from Air.	Means for 36 years, 1872 to 1885 and 1884 to 1915.
January	27	45.2	+2.4	49.0	- 3.2	43.0	+18.0	6.0	-22.2	48.1
February	24	48.8	+2.2	50.0	- 4.3	48.0	+14.2	2.0	-18.5	47.1
March ..	26	48.2	+3.3	50.0	- 6.9	46.0	+15.9	4.0	-22.8	47.4
April ....	26	49.9	+2.9	52.0	-13.4	49.0	+14.1	3.0	-27.5	48.9
May ....	27	54.0	-0.2	57.0	-12.0	51.0	+ 7.2	6.0	-19.2	52.1
June ....	25	57.3	+0.8	59.0	-12.8	55.0	+12.7	4.0	-25.5	55.6
July ....	27	58.5	-1.7	60.0	-15.9	57.0	+11.0	3.0	-26.9	58.3
August ..	27	60.5	-0.3	61.5	-10.9	59.0	+12.1	2.5	-23.0	59.7
September	25	58.0	+2.1	60.5	- 7.9	56.0	+12.3	4.5	-20.2	59.0
October ..	27	55.0	+4.3	56.0	- 4.0	53.0	+14.0	3.0	-18.0	56.9
November	26	51.8	+4.0	54.0	- 2.0	50.0	+20.4	4.0	-22.4	53.4
December	26	51.8	+4.0	53.0	- 2.8	50.0	+14.0	3.0	-16.8	50.2
Means ..	26	53.2	+2.0	55.2	- 8.0	51.4	+13.8	3.8	-21.9	53.1

## Additional Sea Temperatures in Falmouth Bay during 1918.

1918.	Place of Observation.	Temperature.	1918.	Place of Observation.	Temperature.
August 24	Falmouth Bay ..	66.0	September 28	Falmouth Bay ..	55.5
September 2	ditto .. ..	58.0	" 30	ditto .. ..	55.0
" 3	ditto .. ..	59.0	October 8	ditto .. ..	54.0
" 6	ditto .. ..	59.5	" 25	ditto .. ..	54.0
" 19	ditto .. ..	58.0	" 30	ditto .. ..	54.5
" 20	ditto .. ..	57.0	November 18	ditto .. ..	50.5
" 21	ditto .. ..	56.0	" 26	ditto .. ..	51.0
" 26	ditto .. ..	55.0	" 27	ditto .. ..	50.5

# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Mean and Extreme Pressure of the Air, Mean Amount of Cloud at 7 a.m., 1 p.m. and 6 p.m., and NUMBER OF HOURS OF BRIGHT SUNSHINE at FALMOUTH OBSERVATORY during 1918.

DATE.	PRESSURE OF AIR.						CLOUD, 0-10.			BRIGHT SUNSHINE.					
	Mean pressure of the Air, in millibars.	Absolute Maximum, in millibars.	Date of Maximum.	Absolute Minimum, in millibars.	Date of Minimum.	Extreme Monthly Range, in millibars.	Mean elastic force of Vapour, in millibars.	I.	II.	III.	Number of days on which Bright Sunshine occurred.	Percentage of Possible Duration.	Mean number of hours of Bright Sunshine for 35 years, 1881-1915.	Mean number of days on which Bright Sunshine occurred in 35 years, 1881-1915.	
1918.															
January..	1014.7	1035.9	4	977.0	20	58.9	8.5	6.7	6.9	6.1	21	25	57.6	20	
February ..	1022.8	†1047.0	25	1001.1	28	45.9	10.0	8.0	8.1	7.8	18	16	84.1	21	
March ..	1016.8	1034.9	21	983.6	31	51.3	8.7	7.1	6.1	5.1	31	37	138.1	26	
April ..	1013.9	1024.2	27	993.2	1	31.0	9.0	5.2	5.8	4.3	25	46	184.4	27	
May ..	1017.8	1032.0	29	1000.8	13	31.2	11.9	5.4	5.1	3.2	28	51	230.9	29	
June ..	1021.3	1032.4	1	1000.7	18	31.7	12.4	5.2	5.0	2.8	29	59	222.9	28	
July ..	1014.7	1033.0	4	997.2	23	35.8	14.7	5.9	5.7	4.0	28	53	224.2	29	
August ..	1018.4	1029.3	13	1001.5	3	27.8	15.5	7.4	6.7	6.5	28	35	211.8	30	
September ..	1009.2	1023.2	25	987.2	22	35.9	13.0	6.9	7.1	6.4	27	36	168.4	27	
October ..	1017.1	1027.9	1	1003.3	31	24.6	10.4	6.7	6.6	6.9	27	31	116.1	26	
November ..	1017.2	1034.9	9	976.2	2	58.7	10.0	6.9	6.9	6.6	24	30	75.8	22	
December ..	1012.9	1027.1	14	995.5	18	31.6	10.9	8.5	8.0	6.8	19	21	55.0	20	
Totals or Means ..	1016.4							6.7	6.5	5.5	305	37	1764.3	305	

The readings of the Barometer are in millibars (1 mercury inch = 33.8632 millibars), and have been reduced to 32° F. at mean sea level and latitude 45°, and corrected for index error and capillarity. The extreme Maxima and Minima of barometric pressure are from the Dines Float Barograph, and have been standardised. The records of bright sunshine are from the Campbell-Stokes Sunshine Recorder. The results are published by permission of the Meteorological Office, London. 30.015 mercury inches, † 30.923 mercury inches, § 28.829 mercury inches.

# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Table of Mean and Extreme TEMPERATURE OF THE AIR and of HYGROMETRIC CONDITION at Falmouth Observatory for 1918.

DATE.	TEMPERATURE OF AIR.										HYGROMETRIC CONDITION.									
	Mean of daily Maximum and Minimum.	Mean of daily Maxima.	Mean of daily Minima.	Mean daily range.	Absolute Maximum.	Date of Maximum.	Absolute Minimum.	Date of Minimum.	Extreme Monthly range.	Dry Bulb.			Depression of Wet.			Humidity. Complete Saturation = 100.				
	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	Means for corrected	Range			
1918.																				
January ..	43.0	47.3	38.7	8.6	53.2	29	25.0	5	28.2	42.6	45.7	43.3	1.2	2.0	1.3	89.8	84.9	86.8	87.8	88.3
February ..	46.8	50.3	43.2	7.1	54.3	10	33.8	26	20.5	46.1	49.1	47.3	1.3	2.1	1.4	90.1	85.6	90.6	88.8	89.7
March ..	44.8	50.4	39.1	11.3	61.4	24	30.1	1	31.3	42.5	48.8	45.7	1.2	3.6	2.3	90.2	75.8	83.3	83.1	84.5
April ..	47.0	52.9	41.0	11.9	65.4	27	34.9	15	30.5	44.6	51.2	48.8	2.0	4.5	3.4	88.4	71.9	78.0	78.4	80.8
May ..	54.2	60.7	47.7	13.0	69.0	28	42.6	5	26.4	52.7	58.5	57.1	2.3	4.4	4.2	85.7	74.7	76.1	78.8	82.3
June ..	56.9	64.5	49.3	15.2	71.8	3	42.3	28	29.6	57.5	62.2	60.7	3.7	6.2	5.9	77.9	67.0	65.2	70.0	73.7
July ..	60.4	66.9	53.8	12.1	75.9	1	46.0	10	29.9	58.8	64.4	62.5	2.2	5.1	4.4	86.5	73.2	75.9	78.5	82.4
August ..	63.4	66.6	65.0	11.6	72.4	20	46.9	24	25.6	58.5	65.1	62.1	1.2	4.7	3.1	92.0	74.5	82.3	82.9	86.0
September ..	55.9	61.1	50.6	10.5	68.4	6	43.0	29	25.4	53.4	59.4	56.1	1.8	3.9	2.3	88.2	77.6	85.9	83.9	85.8
October ..	50.9	56.2	45.5	10.7	60.0	3	39.0	18	21.0	48.9	55.0	51.1	1.2	3.6	1.6	91.4	77.7	88.9	86.0	88.1
November ..	47.5	52.0	43.0	9.0	56.0	1	29.6	18	26.4	46.3	50.8	47.6	1.4	2.9	1.6	90.0	81.2	88.7	86.6	87.3
December ..	48.2	51.7	44.7	7.0	55.8	1	36.0	27	19.8	48.2	50.1	48.6	1.1	1.6	1.0	92.2	89.7	92.8	91.6	92.2
Means..	51.4	56.7	46.0	10.7						50.0	55.0	52.6	1.7	3.7	2.7	88.3	77.8	83.0	83.0	85.1

The data are from Thermometers divided on the stem and verified and placed in a Stevenson Screen at a height of 4 feet over grass. The results are published by permission of the Meteorological Office, London.



# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

RELATIVE MONTHLY NUMBER OF DAYS OF WIND from the Four Cardinal Points of the Compass; Mean and

Extreme VELOCITY OF WIND in metres per second, and Monthly and Yearly RAINFALL

at FALMOUTH OBSERVATORY for 1918.

DATE.	WIND.										RAIN.					
	Relative proportion of				Highest average hourly wind in metres per second during one hour.	Direction of Maximum velocity.	Day and hour of Maximum velocity.	Maximum gust in metres per second.	Time, hour and minute of maximum gust.	Rain.	Mean for 45 years, 1871-1915.	Greatest amount in one day.	Rate.	No. of rainy days.	Mean No. of rainy days for 45 years, 1871-1915.	
	N	E	S	W												
1918.																
January	4	4	14	9	26	S S W	20 4 p.m.	34	20 4 25 p.m.	135.0	118.4	31.2	18	19	20	
February	3	1	13	11	21	S	4 5 a.m.	27	9 1 50 p.m.	22.9	98.6	19.8	28	16	17	
March	7	10	9	5	22	S W	31 2 a.m.	32	31 3. 0 a.m.	46.6	89.2	12.0	6	10	18	
April	14	7	4	5	16	—	6 9 a.m.	21	6 9.10 a.m.	50.1	71.1	13.3	2	14	16	
May	11	7	6	7	14	E	2 8 p.m.	19	23 9.50 a.m.	29.3	57.7	7.6	3	8	13	
June	12	4	3	11	15	S S W	18 2 p.m.	21	10 7.40 a.m.	25.7	62.0	16.5	18	9	11	
July	7	3	10	11	17	S S W	22 2 p.m.	21	22 1.55 p.m.	82.5	77.0	17.1	15	15	16	
August	7	2	7	15	15	W	6 7 a.m.	23	6 7.25 a.m.	59.4	86.9	22.3	2	14	16	
September	3	2	10	15	21	S W	9 7 p.m.	28	9 8.20 p.m.	211.9	84.2	38.7	29	26	16	
October	10	2	8	11	24	—	6 3 a.m.	29	6 3.40 a.m.	89.3	132.1	18.2	9	26	20	
November	5	7	8	10	26	S S W	2 4 a.m.	35	2 3.45 a.m.	98.6	129.5	38.3	1	15	19	
December	4	1	9	17	19	W S W	23 7 a.m.	27	23 6.50 a.m.	210.7	155.5	18.7	21	31	22	
Totals	87	50	101	127						\$1132.0	†1162.3			203	207	

The velocity of the wind in metres per second is from the Pirie's Pressure tube Anemometer at Pendennis Castle and is the average for 30 minutes before to 30 minutes after the hour. The direction of the wind is from the Robinson Anemometer at Falmouth Observatory. The Rainfall, measured in millimetres, (1 in. = 25.4 mm.), is from the 11 inch self-recording Buckley Gauge, 2 feet above ground; the number of Rainy Days are those on which 0.01 in.) or more, of rain was recorded; the values given are from midnight to midnight. The results are published by permission of the Meteorological Office, London.

\* 58.2 miles per hour. † 78.3 miles per hour. ‡ 44.57 inches. § 45.75 in. lbs.



# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Monthly totals of the HOURLY VALUES OF RAINFALL, from the continuous records of the Beckley Rain Gauge at Falmouth Observatory for 1918.

1918.	1	2	3	4	5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	9	10	11	Mid.	Total.
January..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	135.0
February	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	92.9
March	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46.6
April	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50.1
May	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29.3
June	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25.7
July	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82.5
August	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	59.4
September	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	211.9
October	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	89.3
November	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	98.6
December	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	210.7
Total mm.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1132.0
Total inches..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44.53

The rain is measured in millimetres (1 in. = 25.4 mm.) and the hourly falls are the amounts registered as having fallen from half an hour before to half an hour after each hour. The results are published by permission of the Meteorological Office, London.

# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE, 5° 5' W. Height, 167 feet above mean sea level.

## Monthly Totals of HOURLY VALUES of BRIGHT SUNSHINE at Falmouth Observatory during 1918.

1918.	4	5	6	7	8	9	10	11	noon.	1	2	3	4	5	6	7	8	Total.
January..	..	..	..	..	2.0	7.8	7.7	9.1	10.2	10.3	9.7	7.6	2.8	..	..	..	..	67.2
February ..	..	..	..	..	3.3	5.2	5.7	6.8	5.5	5.5	5.3	4.4	3.3	0.6	..	..	..	46.6
March ..	..	..	0.4	4.8	9.4	12.1	14.2	15.4	15.8	15.2	15.8	14.4	12.7	5.7	0.1	..	..	156.3
April ..	..	..	0.1	5.8	15.1	16.2	15.5	19.1	17.1	16.5	16.7	16.5	15.6	13.1	6.5	0.2	..	188.2
May ..	..	..	2.1	10.8	17.2	17.1	17.7	18.4	19.9	19.8	19.7	18.1	19.3	19.6	18.5	9.3	..	241.6
June ..	..	0.1	9.6	16.0	16.6	17.8	18.1	19.8	21.6	21.6	22.6	22.7	23.2	22.9	21.6	16.1	1.0	286.4
July ..	..	..	7.2	16.6	17.2	17.8	17.3	19.4	19.4	19.1	19.1	20.3	20.9	20.9	16.1	9.7	0.5	258.6
August ..	..	..	0.4	6.4	10.8	10.9	10.1	13.2	14.6	16.3	12.9	11.3	11.0	11.5	8.7	1.5	..	156.5
September ..	..	..	..	1.4	8.3	13.1	13.9	12.4	12.1	14.3	13.8	11.8	10.8	8.5	1.0	..	..	185.5
October ..	..	..	..	..	0.8	5.3	10.6	13.4	12.9	13.0	12.1	12.5	6.7	1.6	..	..	..	103.3
November ..	..	..	..	..	..	2.7	9.0	12.2	10.4	12.7	11.9	7.1	4.3	..	..	..	..	80.5
December ..	..	..	..	..	..	..	7.8	8.7	8.2	9.1	8.3	4.8	0.1	..	..	..	..	52.3
Total ..	0.1	19.4	57.4	86.0	113.4	142.2	155.2	166.7	175.3	172.1	166.2	151.5	130.7	104.4	72.8	38.8	1.5	1752.0

The records of Bright Sunshine are from the Campbell-Stokes Sunshine Recorder. The instrument in use is the property of the Meteorological Office, London, by whose permission the results are published.

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LIEUT.-GENERAL SIR RICHARD HUSSEY VIVIAN, BART.,  
FIRST BARON VIVIAN, G.C.B.

VICE-PRESIDENT OF THE ROYAL CORNWALL POLYTECHNIC SOCIETY, 1835 TO 1837.

## Annual General Meeting.

THE eighty-ninth Annual General Meeting of the Royal Cornwall Polytechnic Society was held at the Polytechnic Hall, Falmouth, on Friday, February 6th, 1920, the President (Mr. H. Jenner) occupying the chair.

Among those present were : The High Sheriff of Cornwall (Mr. R. Barelay Fox), Sir Edward Nicholl, M.P., Capt. A. Rogers, R.N., Major C. Ll. Fox, Major J. S. Henderson, Major W. Luard, Capt. W. Tillar, the Rev. C. Daly Atkinson, the Rev. W. B. Monger, Dr. F. J. Wethered, Messrs. H. D. Acland, F. J. Bowles, H. B. Carlyon, J. Chellew, T. F. G. Dexter, H. F. Elkington, Howard Fox, Wilson Ll. Fox, A. Pearse Jenkin, E. P. Kestin (Hon. Treasurer), R. Morton Nance, E. W. Newton (Secretary), J. B. Phillips, L. Phillips, John Rogers, Walter Rogers and W. Upton, Mrs. F. J. Bowles, Mrs. R. B. Fox, Mrs. Howard Fox, Mrs. Gibson, Mrs. H. Jenner, Mrs. W. B. Monger, Mrs. J. Rogers, Mrs. W. W. J. Sharpe, Mrs. J. Stephens, Miss Armstrong, Miss R. Barelay, Miss H. Hichens, Miss A. M. Phillips and Miss E. M. Stephens. Letters of apology were read from Colonel Sir Courtenay B. Vyvyan, Bart., Capt. J. P. Rogers, Professor H. Louis and Mrs. H. Horton Bolitho.

Before proceeding with the ordinary business of the meeting the President said that he was sure they would all be pleased and interested to hear that Canon Burns was now very much better. His illness had been a very serious one, but when he saw him a few days ago his health had

greatly improved and it was quite possible that he might be coming back to Falmouth before very long.

The Secretary then read the minutes of the last Annual Meeting, which were confirmed, and the Annual Report of the Council for 1919.

After reading the Report the Secretary said that, realising the interest the Society took some years ago in the question of tin and tungsten research, the Imperial Mineral Resources Bureau (a Government department) had invited them to appoint a representative on the Tin and Tungsten Committee—(applause). The matter was very carefully thought out by the Executive Committee, who invited Mr. M. T. Taylor, of East Pool Mine, to accept the position. That decision was taken because Mr. Taylor and the directors of the mine had taken a keen interest in mineral research, and had spent a considerable amount of money on the question. He was very pleased to inform the meeting that Mr. Taylor had accepted the position.

Mr. Howard Fox proposed the adoption of the Council's report. It had been exceedingly well drawn up and was very encouraging.

Mr. F. J. Bowles said that he had very great pleasure in seconding. The year under review began with great uncertainties, and had been beset with difficulties and perplexities throughout its course. He hoped the Council had not been too optimistic in the words it had used with reference to its being able to resume a normal state. The enormous difficulties consequent upon the war found their way into this corner of our island, and affected their Society, just as they affected any other branch of life. But they had cause to be very thankful that throughout the war they had been able to keep their heads above water, and that now they were in a position to resume some at least of their activities. They had learned in that Society that the reconstruction they desired and were working for would very often have



to be a reconstruction on different foundations with a different super-structure to that on which they built in years gone by. Things would never again be the same, precisely, either for our scientific or philosophical departments of life, although he was glad to see their Society had seen its way to resume two of its activities, which were very desirable. An excellent lecture was given by Miss Proctor a few weeks ago, and soon they would have a lecture from the representative of the National Trust for Places of Historic Interest. It was a work similar to that undertaken by the County Council, their Society and the Royal Institution, and one into which their President threw a great deal of interest. It had to be suspended during the war, and he hoped the lecture would tend to revive interest in the question. Referring to the proposal to have an exhibition, Mr. Bowles said it had been agreed that the day of trade exhibitions on a large scale had passed, and that no attempt to revive anything like the exhibitions they had twenty or thirty years ago would have much chance of success, and would be not merely a hazardous speculation but a foolish one. He was glad to see they were to go back rather to first principles, and he hoped something would be done to encourage talent in the county, and that there would be an exhibition of models of work done by their young people in connection with the technical schools. It would necessarily be on a small scale, but he thought it was within their power to do it, with the aid of the County Council, and he trusted it would be attempted. They started a new year in a very hopeful spirit. They had accomplished something, and had more in hand, and with the co-operation of everyone he believed next year they would be able, when they met, to report further progress—(hear, hear).

The Report was unanimously adopted.

The Report of the Observatory Committee was then read by Mr. Wilson Ll. Fox.

In moving its adoption Mr. A. Pearse Jenkin said that he thought the Report a very valuable one. "This," he proceeded, "is a critical time in the meteorological history of the country, because rather momentous things have taken place. First: The British Rainfall Association, which has been in private hands ever since its inauguration, has now been taken over by the Government, and forms a branch of the Meteorological Office. Another important change is that the work of the Meteorological Office has been transferred to the Air Ministry." Mr. Pearce made reference to a work just issued by the Meteorological Office, written by Sir W. Napier Shaw, director of the Meteorological Office, on the structure of the atmosphere. In that report there was reference to the Observatory at Falmouth, where wind figures were recorded, and statements were made, which seemed to him very surprising, with reference to the wind velocities at Falmouth. The question of wind velocity was of great importance, especially in reference to the navigation of the air, and he would like the Observatory people to go into the figures and give explanation of the anomalies which occur.—The adoption of the report was seconded by Major J. S. Henderson and carried unanimously.

The Secretary (Mr. Newton) proposed the election of the following new members: The Viscount Falmouth, The Right Rev. the Lord Bishop of Truro, Mr. Alfred E. Fox, Mr. Wm. E. Fox, Rev. W. Bevan Monger, Mr. W. Upton, Mr. Philip C. Roberts, Mr. and Mrs. Gerald L. Anderton, Mrs. Wethered, Capt. Tillar, the National Library of Wales, and the Penzance Library.

That, said Mr. Newton, was the fifteenth list of new members he had proposed to annual meetings. He thought the time had come when they should endeavour to increase their membership. He quite believed that if more people were aware of the dimensions and value of their Library they would be besieged with new members. The President

and himself had tried as far as possible to complete their list of Cornish works, and he thought he might say they had as fine a collection of histories of Cornwall as any Library in the county.

The President called attention to the fact that one of the new members, Captain Tillar, had been good enough to give valuable assistance to the Society in re-rigging an interesting model of a brig or corvette.

The motion for the election was seconded by Dr. Wethered and carried unanimously.

At the proposal of Mr. John Chellew, seconded by Mr. R. Barelay Fox, the following were elected vice-presidents : Viscount Falmouth, Sir Edward Nicholl, M.P., Mr. T. F. G. Dexter, Mr. John Badger, and Canon M. B. Williamson.

The financial statement (presented by Mr. Kestin) showed that the Society began the year with a balance of £120, and ended with a credit of £121 4s. 1d. Receipts were £707 11s. 1d.

The adoption of the accounts was moved by Mr. Dexter, and seconded by Major Luard.

The President, in reply to a remark about their reserve fund, stated that they always spent the interest on their investments, and the Secretary gave it as the experience of the Society that it was advisable to have something in reserve for "rainy days."

Another member referred to the proposed exhibition and remarked that none of them would like to face that without something at his back.—The motion was carried unanimously.

Mr. Carlyon moved a vote of thanks to the Observatory Committee for their weekly, daily, almost hourly work.—Mr. Walter Rogers seconded, and it was agreed to.

Mr. Acland moved a similar vote to the Finance Committee and those who read papers at the summer meeting. They lived in what was practically a unique country as

regarded material for papers.—Mr. Elkington seconded, and the motion was carried.

The President read a short paper dealing with the proposed collection of rural lore by means of elementary and other schools and gave particulars of a scheme which had been laid before the County Education Authority by the Royal Institution, and had been enthusiastically adopted by them. He had received a letter from the chairman of the County Council, asking him to draw up a paper of suggestions as to how they should proceed to carry out the scheme, with the intimation that if after consideration they approved them, the committee would send them out to the district bodies for circulation in the schools.

There was a project also for starting a society with very similar objects at St. Ives. There was to be a meeting the following week proposing to start a “St. Ives Old Cornwall Society” for collecting, considering and reading papers about such subjects. As an elector he was pleased to see the County Council was taking an interest in such important things as archaeology and folk-lore, instead of wasting its time over things that did not matter. It was very probable that at their next meeting they would re-appoint the committee for the Preservation of Ancient Monuments.

To encourage the following out of the scheme mentioned by the President, Sir Edward Nicholl expressed his willingness to offer a prize, confined to Cornish school children, of £25 a year—(applause). His reason for making that offer was to be found in his early days—forty years ago—when he exhibited at Falmouth Polytechnic a longitudinal sectional drawing of a G.W.R. locomotive, for which he was awarded a prize. He did feel proud, and was quite sure it would be an incentive to the school children of the county to offer a prize worth working for—(hear, hear).

The Chairman characterised it as a most sporting offer—(hear, hear)—and he thought a great deal of good might

be done by it. The Polytechnic once started something of the same nature by giving a medal for the best collection of notes about any Cornish parish, and received a fair number of papers. Two of them (on Phillack and Crantock) were bracketted first. They all thanked Sir Edward most heartily for his generous offer—(applause).

Sir Edward said, if the committee desired, he would instead invest £500 in War Loan to endow a scholarship.

The President expressed the gratitude of the Society for such a munificent offer, which the meeting heartily applauded.

Proposing a vote of thanks to the Chairman, Sir Edward Nicholl congratulated him on the recent honour conferred on him—(hear, hear).—The motion was seconded by Mr. Badger and carried.

## Report of the Council for 1919.

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THE Report of the Council of the Royal Cornwall Polytechnic Society for 1919, the first year of restored peace, shows a return to something very like normal conditions in the work of the Society. But the return of nominal peace, though of course in every way a satisfactory thing in itself, has been perhaps a little disappointing to those who hoped that the tangle of the last five years would be cleared up immediately. The process of restoration has been slower than many of us hoped. Commodities of all sorts have been scarce and dear, and as yet few things can be said to flourish except prices, which, as everyone experiences, are abnormally high. But in spite of continued adverse conditions, the work of the Society has gone on very much as it used to do before the war. And there is now a very different spirit in its work. During the great struggle, when the whole fate of Britain was in uncertainty, and one knew not what a day might bring forth, everyone felt that it was his duty to give the best of his energies to the defence of the realm, and only at odd times his second best, if that, to keeping societies such as ours going. Now all this is changed. The realm is safe, we hope for ever, and it is not "fiddling while Rome is burning" if we turn our attention to scientific and antiquarian pursuits, as we used. So the Council now presents its report for the past year in a spirit of hopefulness for the future, which is based on its experience of 1919.



On June 11th, 1919, the Royal Institution of Cornwall, founded in 1818, held the deferred celebration of its centenary. On this occasion the Duke of Cornwall visited Truro and opened the new Museum of the Institution. At the opening ceremony, which was in every way highly successful, illuminated addresses were presented to the President of the Royal Institution (Mr. John Charles Williams, Lord Lieutenant of Cornwall) by the Presidents of the Royal Cornwall Geological Society (Mr. Horton Bolitho) and the Royal Cornwall Polytechnic Society (Mr. Henry Jenner). The address of the Polytechnic Society was as follows :—

TO THE PRESIDENT, VICE-PRESIDENTS, COUNCIL  
AND MEMBERS OF THE ROYAL INSTITUTION OF  
CORNWALL.

We, the President, Vice-Presidents, Council and Members of the Royal Cornwall Polytechnic Society, desire to offer to the Royal Institution of Cornwall our most hearty congratulations on the completion of the first century of its existence and on the opening of its new Museum.

Our Society, which is not a rival, but a younger brother of yours, and shares with you in the memory of many distinguished Cornishmen, who have been members of both, appreciates very fully the century of excellent work that has been accomplished by the Royal Institution. You have numbered among your workers many whose reputation was far more than local. Such antiquaries as Sir John Maclean, William Copeland Borlase, John Jope Rogers, Arthur Langdon, William Iago and E. H. W. Dunkin, such geologists as Joseph Henry Collins, Charles Foster Barham, William Jory Henwood and Sir Clement Le Neve Forster, such naturalists as the two Couches and Charles William Peach, such a botanist as Frederick Hamilton Davey, and many-sided workers such as Thurstan Peter and John Davies

Enys, not to mention others who are happily still living, were men of whom any Society might well be proud, men whose fame was spread far beyond the limits of Cornwall. Your Museum, the result of a century of judicious collecting, now adequately housed in a building which is an honour to the city and to the County, compares favourably with any provincial Museum in the Kingdom in its archaeological, ethnographical, artistic and natural historical collections, and excels most of them in its remarkably fine mineralogical collection.

May the second century of the Royal Institution of Cornwall be as prosperous as its first, and may it do as good work in its new home as it has already done in its old, work for that cause which we as well as you have so much at heart, the service of our beloved motherland, Cornwall.

Signed on behalf of the Royal Cornwall Polytechnic Society,

HENRY JENNER, *President.*

E. W. NEWTON, *Secretary.*

The University of Wales has bestowed the degree of "Master of Arts, *honoris causa*" on your President in appreciation of his important contributions, extending over many years, to Cornish studies.

Your Council feels that this is not only a very deserving compliment extended to Mr. Jenner but also reflects honour on your Society.

The Summer Meeting was more comprehensive in character than those held during the war, when it was thought undesirable to have excursions. This year, however, as peace had been proclaimed, your Council decided to have the usual programme as in former non-exhibition years. On July 14th, about fifty members proceeded by motor charrs-à-banc to the Lizard; the weather was perfect and the walk to Kynance, where the first stop was made,

was most interesting, and after lunch at the cove the party inspected the Devil's Bellows, caves and other points of interest. On returning to the Lizard tea was provided at Hill's Hotel. On the return journey a stop was made at St. Keverne where the visitors were met by the Rector, Mr. Norris, who kindly conducted them through the Church and pointed out and explained the various points of interest. This Church is situated in one of the most picturesque spots in Cornwall and owing to its near proximity to the Manacle Rocks has been the scene of many sad events, as the numerous monuments to those lost in various shipwrecks show.

Before leaving, the President proposed a vote of thanks to the Rector, who suitably responded. The party then returned to Falmouth after a most successful day which was enjoyed by all who were present.

On the following day, July 15th, a meeting was held in the Library of the Polytechnic Hall, Falmouth, at 11 a.m., when your President (Mr. Henry Jenner) occupied the chair and gave an address entitled "The Earls and Dukes of Cornwall," a continuation of his paper at the former meeting "The Royal House of Damnonia," which was much appreciated.

A paper was then read by Mr. R. Morton Nance on "Ship Modelling as a Craft" illustrated by photographs. It was felt that the paper was very interesting and instructive and Mr. Nance was warmly thanked for the trouble he had taken.

This was followed by a paper on the "Relation between Rainfall and Cornish Mine Pumping" by Mr. A. Pearse Jenkin.

The President's address and both these papers will appear in this year's Annual Report.

The secretary (Mr. E. W. Newton) also gave a short address on "The Inspection Department of the Air Board,"

explaining its influence on the evolution and development of the aeroplane as a fighting unit.

In the afternoon a steamboat excursion was arranged and the members and their friends embarked for a trip on the s.s. *Queen of the Fal* around Falmouth Harbour into Helford River and up the River Fal. During this trip the first meeting of the Rainfall Association was held, when the following officers were elected :—President, Mr. Wilson L. Fox ; Hon. Secretary, Mr. A. Pearse Jenkin ; and the President, Hon. Secretary and Commander A. Rogers, R.N.R., to form a Committee to arrange the organisation of the Rainfall Stations and their inspection. It was decided that the annual subscription should be 5s. or £1 for a period of 5 years. Hope was expressed that the Mines and Waterworks Companies would become members and all others interested in rainfall statistics. Tea was served on board and on reaching Malpas many of the party left to return by their respective trains, and the others returned in the boat to Falmouth, thus concluding one of the most successful summer meetings held by your Society.

Your thanks are due to Mr. Wilson L. Fox who again represented your Society as a delegate to the Corresponding Societies of the British Association at their meeting at Bournemouth, September 8th-13th. His report will also be printed in the Annual Report of this year.

The commemoration of the centenary of James Watt was held at Birmingham on September 16th-18th.

Although Watt was born in Scotland, he was closely identified with Cornwall, and it was in the Cornish mines that his inventive genius had its full scope to be applied to the improvement of the steam engine and the solution of the great mechanical problems of his age.

In this work he consulted and was largely assisted by those well known Cornishmen :—Lord de Dunstanville, Sir Charles Lemon, Davies Gilbert and Robert Were Fox,

who afterwards were closely connected with and took such an active interest in the formation of the Polytechnic Society, on whose Medals is the portrait of Watt.

It was therefore very fitting that this Society should be invited to be represented at the Commemoration, and at the request of the Council your secretary acted as your representative on that occasion.

The Third Celtic Congress, at which your Society would have been represented, was arranged to take place at Edinburgh on the 4th to 9th of October. Your President went to Scotland early in September intending to be present at the Congress as representative of the Royal Institution of Cornwall, and, if no one else was there in that capacity, of the Polytechnic also. Then came the railway strike, and he was detained at Strathpeffer until too late for it. As all the delegates from other Celtic countries than Scotland were also unable to get to Edinburgh, the Congress had to be postponed, and will take place at the Whitsuntide of 1920. Your President was able to get to Edinburgh in time for the last meeting of the Comunn Gaidhealach (Gaelic Association) which closed the "Mod," a sort of Highland Scottish Eisteddfod, which was arranged to follow the Congress. At this meeting he received a very gratifying welcome as a representative of Cornwall.

A very successful lecture on "The Romance of Starland" was given in the Polytechnic Hall on 31st October, by Miss Mary Proctor, F.R.A.S., F.R.Met. Soc., and your thanks are due to this lady and Dr. J. F. Wethered who presided.

Your Observatory still continues its useful work and its Report for 1919 with the usual Meteorological Sea Temperature Tables and Notes will appear at the end of the Annual Report.

The consent of the Director of the Meteorological Office has been obtained to allow visitors to be shown over

this Observatory on the afternoon of the 2nd Friday in each month between the hours of 2.30 and 5 p.m.

The Council much regrets to have to record the loss sustained by death of the following members :—

February 23rd, Lieut. R. H. S. Henderson-Bull, a member of a distinguished family who have been closely associated with your Society. His grandfather, the late Captain James Henderson, of Truro, for many years took a considerable interest in your exhibitions and was a vice-President and chairman of the mechanical judges. Although Lieut. Henderson-Bull was comparatively a young man he was also a vice-President and a valued member of your Executive Committee. His loss will be keenly felt.

March 22nd, Arthur Willmore, an esteemed member for many years, a past vice-President and a former member of the Finance Committee. He was respected by all who knew him.

Mrs. Hyde, a member for many years.

August 31st, John Vivian, County Alderman, an old esteemed member. A man of high culture and genial manners, he will be greatly missed by all who knew him.

October 21st, Mary Jane Fox, at the age of 88, at her home in Kensington. She was the widow of the late A. Lloyd Fox, of Pennere, near Falmouth, who was an Honorary Secretary of the Society from 1865 to 1869 inclusive. She was one of its oldest members, having joined in 1864—and for many years served on the committee. She shared her husband's many interests in religious and social work, amongst which the Polytechnic Society took a high place. By her kindly disposition and considerate nature she won many friends.

It will be your duty to elect five Vice-Presidents in the room of Sir C. Croydon Marks, M.P., Col. J. Faulkner-Brown, John Gilbert and Edgar Taylor who retire by rotation, and W. H. Trewartha James who has resigned



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his membership. Your Council recommends the following members for election :—Viscount Falmouth, the Rev. M. B. Williamson, Sir Edward Nicholl, M.P., Mr. T. F. G. Dexter and Mr. J. Badger.

The balance sheet for the year has been duly audited and will be submitted by your treasurer for your acceptance

# Hon. Treasurer in Account with the Royal Cornwall Polytechnic Society.

DR.

1920.

CR.

	£	s.	d.
To Balance in Lloyds Bank, Falmouth	119	0	3
„ Balance in Secretary's hands	1	0	0
		120	0 3
„ Donation, H R H Duke of Cornwall		5	0 0
Transferred from Deposit to Current Account		17	9 1
„ Members Subscriptions for 1919	133	5	6
Arrears	9	14	0
		142	19 6
„ Rent of Hall		307	11 0
„ Rent of Committee Rooms		43	16 0
„ Rent of Club Room		7	10 0
„ Acknowledgment Rent		0	1 0
„ Interest on War Stocks		40	11 9
„ Sale of Report		0	2 6
„ Sale of tickets for Summer Meeting		22	10 0

	£	s.	d.
By Invested in War Bonds	100	0	0
.. Salaries	120	0	0
.. Hall Keeper's Wages	45	10	0
.. Lighting and Coal	6	8	0
.. Travelling Expenses	8	13	7
.. Insurances, Rates and Taxes	118	10	3
.. Postage and Telegrams	10	18	10
.. Postages on Annual Report	1	0	0
.. Repairs and Renewals	22	15	6
.. Printing and Stationery	30	13	4
.. Labour and Material	8	17	9
.. Cheque Stamps	0	10	1
.. Outstanding Cheque	4	18	0
.. Rent of Caretaker's Rooms	13	0	0
.. Acknowledgment Rents	0	7	9
.. Overpaid Subscription returned	0	15	0
.. Winding Clock	1	0	0
.. Conveyances	28	18	0
.. Refreshments	19	11	0
.. Donation, Cornwall Rainfall Association	1	1	0
.. Donation, Wall Centenary Fund	2	10	0
.. Donation, Levant Mine Disaster	10	10	0
		14	1
.. Library, Periodicals	2	2	0
.. Library, Bookcase	20	0	0
		22	2
.. Lecture Fee	4	18	11
.. Balance in Lloyds Bank, Falmouth, 31st December, 1919	121	4	1
	£707	11	1

ASSETS—To Balance in Lloyds Bank, Falmouth  
„ Invested in War Stock

£ s. d.  
121 4 1  
850 0 0  
£971 4 1

LIABILITIES—Unpaid Printing Accounts

£63 3 6

*Audited and found correct.*

HAROLD B. CARLYON, } Audit  
JOHN BADGER, } Committee.

**CORRIGENDA.**

For Year Ending 1920 *read* Year Ending 1919.



## Summer Meeting and Excursion, 1919.

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FOR the first time since the outbreak of the Great War, the Summer Meeting of the Royal Cornwall Polytechnic Society included an excursion. During the war it would have been impossible to organise excursions, even if the Society had thought it desirable or appropriate to do so, which it did not. Now, after an interval of six years, for the last excursion was in 1913, that of August, 1914, which had been carefully planned in connection with the proposed exhibition at St. Austell, having been prevented by the war, it was found possible to resume the Society's excellent old custom.

On Tuesday, July 15th, an excursion to Kynance Cove, the Lizard and St. Keverne was arranged. It might have been thought to be tempting Providence to choose St. Swithin's Day for an expedition whose success depended so much on fine weather, but it was evident that the Saxon Saint had no influence over Cornish weather, for the day was perfect, bright and clear and not too hot. The choice had really been influenced by the state of the tide, for the only time for a satisfactory visit to Kynance Cove is when there is a low tide about noon.

Two motor char-a-bane were engaged, one of which, containing the greater part of the company, left the Polytechnic Hall, Falmouth, at about 8 a.m., while the other went round by Redruth and Camborne to pick up the rest

of the party, the two cars meeting with commendable punctuality just outside Helston.

The party consisted of the following:—Mr. Henry Jenner (President), Com. A. Rogers, R.N., Major J. S. Henderson, the Very Rev. Canon J. S. Burns, Lieut. Garnet Newton, M.C., Lieut. Sloley, Messrs. Anderton, J. Chellew, T. F. G. Dexter, Wilson Ll. Fox, C. G. Henderson, E. J. Moseley, E. W. Newton (secretary), W. W. J. Sharpe, Herbert Thomas and W. Thomas, Mrs. F. J. Bowles, Mrs. W. Ll. Fox, Mrs. H. Jenner, Mrs. A. Rogers, Mrs. S. B. Williams and the Misses Fox.

The first stop was made at the point about two miles short of the Lizard where a rough track leads across the downs to Kynance Cove. Some of the party got out here and walked direct to the Cove, while others went on with the cars to the Lizard and came by the field path thence to the same point. The tide was low, but still going out, when the party reassembled at the Cove, so that several hours were available for exploring it.

Kynance Cove with its great out-crop of red and green serpentine veined with steatite is in many respects the most beautiful bit of the Cornish coast. It is on a small scale, no doubt, but into the space is crowded a wonderful variety of rocks, peaks and caverns, the effect of which is intensified by the marvellous colour of the serpentine, which on such a day was seen at its best, as was also the colour of the sea. Geologically also the place has many points of interest. Some time ago a deposit of native copper was found here, but, though there is a specimen of over a ton in weight in the Jernyn Street Museum in London, it was luckily not found sufficiently profitable to work it to the destruction of the scenery. Tourists have given silly and rather vulgar names to some details of the Cove, but we need not notice them. The meaning of the name of the place itself is not certain. Ky-nans might mean "dog-valley," a possible



name, and, as the epithet comes first, it would be rather an early one. But there is some reason to think that it is Kynan's, or St. Kynan's Cove. It is not easy to be sure which Kynan, Cynan, Kenan or Conan (for the name has various forms for saints or otherwise in Welsh and Breton) may be associated with the place, but judging from the names of the parishes near, one is inclined to conjecture that he was a Breton, and he may be the Conan after whom Tre-goning Hill—which is probably *Tre-Conan*—is named, whoever he may have been. St. Kea is called "Kenan" in Breton lives of him, and there was a St. Kenan of Plougerne, who was associated with St. Paul of Leon, but there is nothing to connect either of them with this district.

After an excellent luncheon the party returned to the beaches and in the course of the afternoon found their way by various routes to Lizard Town, and had tea at Hill's Hotel. Then they went in the chars-à-banc to St. Keverne by a route which seemed hardly suitable for such conveyances, though it was managed without the smallest mishap. At St. Keverne the Vicar, the Rev. C. H. B. Norris, received the party and showed them the Church. This is an unusually fine one, consisting of a nave and chancel with double aisles. One peculiarity is a curious and probably unique arrangement of three sets of rood-loft stairs. Mr. Norris explained this by pointing out that the original nave was probably the western part of the north aisle, and that the first enlargement of the Church was a prolongation eastward, when what had been the chancel was taken into the nave, and a new chancel with its rood-screen was built. At the second and final enlargement in the 15th century, when the Church was brought to its present dimensions, a third rood-screen, set further eastward and extending across the north aisle and new chancel, was made. This seems a very probable explanation. Another interesting detail in this church is the now almost obliterated wall-painting

representing the story of St. Christopher. This is to be found very fully described, probably by the late Mr. Thurstan Peter, with a photograph, in vol. xvi. of the *Journal of the Royal Institution of Cornwall* (p. 392). There is another description, as part of a report on mural paintings in Cornish churches, in vol. xv., p. 151. The legend of St. Christopher as shown in this painting was related by the President. The church is remarkable as being one of the very few old churches in Cornwall which has a spire. The others are : St. Agnes, St. Anthony in Roseland, Cubert, St. Ewe, Gerrans, St. Hilary, Lostwithiel, Menheniot, St. Minver, Rame, Sheviock, and the chapel of St. Enodoc in St. Minver. That of St. Keverne is a fine one, but it is not the original spire, for that was destroyed by lightning on February 18th, 1770, but it was immediately re-built. It is an important sea-mark. With a granite pillar put up near the Falmouth Observatory by the Royal Cornwall Polytechnic Society under the direction of the late Robert Were Fox in 1845, it forms a true North and South line. The position of the church is such that the view from the church-yard is a very striking one. On this occasion the evening was unusually clear, and the whole south coast of Cornwall from St. Keverne along the east side of Meneage, past Mawman, Falmouth, St. Anthony Head, the Nare and the Dodman to something in the far distance which may well have been the Rame was visible. The Dodman was especially prominent and the hill country inland from it with the china clay works about St. Dennis and St. Austell showed out like a range of snow mountains. Captain Arthur Rogers, with his nautical knowledge of the coast, was able to identify the various headlands, and thereby added very much to the interest of the view.

At the proposal of the President a very hearty vote of thanks was given to Mr. Norris, whose kindness in personally conducting the party over the church, and his

evidently effective care for the preservation of every relic of antiquity in it were highly appreciated by all who were present. After this, as it was getting late, the return to Falmouth was made as rapidly as possible. Thus ended a very successful day, the arrangements of which do great credit to the secretary, Mr. E. W. Newton.

On Wednesday, July 16th, there was a meeting at the Polytechnic Hall in the morning. There were present the following: The President (Mr. H. Jenner), in the chair, Capt. A. Rogers, R.N., Major C. Ll. Fox, Major J. S. Henderson, Major W. Luard, the Very Rev. Canon J. S. Burns, Dr. F. J. Wethered, Messrs. F. J. Bowles, R. Barelay Fox, Wilson Ll. Fox, A. P. Jenkin, S. Mitchell, R. Morton Nance, E. W. Newton (secretary), J. B. Phillips and W. Thomas, Mrs. F. J. Bowles, Mrs. R. B. Fox, Mrs. G. H. Fox, Mrs. H. Jenner, Mrs. A. Rogers, Mrs. Stephens, Mrs. Williamson, Miss O. B. Fox, Miss O. Ll. Fox, Miss S. Fox, and Miss E. M. Stephens.

The President gave an address on "The Earls and Dukes of Cornwall," which appears in another part of the Report. This was followed by a paper by Mr. R. Morton Nance on "Ship-modelling as a Craft." This also appears in another part of the Report.

The President suggested that the modelling of ships might be encouraged for commercial as well as artistic purposes and that it would be a good thing to have a case of such models at one of the Society's Exhibitions.\* In Brittany and Normandy, where he had seen them, and he was told, in Denmark also, it was not uncommon to see models of ships hung up in churches, no doubt as votive offerings in thanksgiving for escape from shipwreck. There must have been plenty of them in old times in so maritime a country as Britain, and especially in so

\* This was done at the Exhibition of 1920, which included a showcase of models by Mr. Morton Nance.

maritime a district as Cornwall, but apparently they had all disappeared.

Mr. Nance said that he would like to see at least one man working at the craft in every isolated village and fishing cove. There was plenty of room for it.

Canon Burns mentioned that in Falmouth a disabled soldier had started a workshop for the modelling of toys and he thought this might form a nucleus for the modelling of ships and boats.

Mr. A. Pearse Jenkin then read a paper on "The relation between rainfall and Cornish mine pumping." He said the investigations on the relation between rainfall and the amount of water pumped from Cornish mines were based, so far as records were concerned, on those kept at Trewirgie, Redruth, and as to the pumping on the quantity pumped at Doleoath mine, as recorded in Lean's "Engine Recorder." He had not been able to obtain a complete set of the latter, but the material he had was sufficient to show what, perhaps, was the most remarkable thing to notice, and that was that the variations in the summer rainfall had little or no effect on the water to be pumped. For example the very wet July in 1888 left no trace on the pumping diagram; again in 1887 even the wet autumn months of September, October, and November did not affect the pumping, because the previous months, February to August, were so dry, but it was further to be noted that this very dry summer did not lower the minimum pumping, though a wet spring retarded the fall to a minimum. In 1886, after a summer rainfall much in excess of that in 1887, the summer pumping was pretty much the same in each year, except that the fall to the minimum was retarded in the former. Engineers agreed that the greater part of the water pumped from Cornish mines came in at the shallower levels, the bottoms of the mines being generally fairly dry. He had come to the conclusion from the data

he had, apart from special conditions, such as mineral veins and cross-courses (that was, assuming the "country" to be uniform), that the country from the surface to a considerable depth, acted as a kind of sponge, and that the shafts sunk through these strata drained it. During the summer these strata were being drained below the saturation point, and whilst the "country" was in that condition, no increase of rainfall affected the pumping, but as winter approached, the increased rainfall gradually brought the "country" up to saturation point, when the increased rainfall became apparent almost at once. The condition might, indeed, be compared to a funnel fitted with a spongy material (the "country") with a hole in the bottom (the shaft). Whilst the sponge was unsaturated the attraction of the material prevented much water finding its way down the hole at the bottom, and moderate amounts of water poured in merely damped the sponge, but when once the sponge was saturated all the water (except for evaporation, and in mining, surface water) found its way to the hole at the bottom.

The secretary (Mr. E. W. Newton) was to have delivered a paper on "Aeronautical Inspection," but official permission not having been given, he confined his remarks to generalities. At the beginning of the war, he said, we had only 150 machines of different kinds, and not enough pilots to man them. That would not have been an effective force for one week. The question was tackled vigorously—though not much was said—and the progress made was remarkable, so that at the time of the armistice we were turning out between 900 and 1,000 machines a week, from the tiny fighting scout to the enormous Handley-Page machine. No nation had approached us in any way. The Inspection Directorate was responsible for most of the advance in aeronautical construction. Not only did they ensure that the pilot or observer should have as perfect a

machine as could possibly be constructed, but they educated the contractor as to ways and means.

In the afternoon the party re-assembled at the Prince of Wales's Pier, Falmouth, and went for a steamer excursion across to the St. Mawes Creek, then round St. Anthony Head and westward along the coast to the Helford River. The state of the tide allowed the steamer to go up the river nearly to Helford Passage. On returning to Falmouth most of the party got out on the pier, but those who were going to Truro and westward were taken on in the steamer as far as Malpas, where cabs, which had been telephoned for by Mr. E. J. Moseley, who had charge of the arrangements of this excursion, met them to take them to the station or town. The weather was not so good or so clear as on the previous day, but it was quite good enough and as the sea was fairly calm, the excursion was very enjoyable.



# The Dukes and Earls of Cornwall.

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*Presidential Address, 16th July, 1919, by  
Henry Jenner, M.A., F.S.A.*

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Last year my presidential address had for its subject the Royal House of the Kingdom of Damnonia. In it I endeavoured to trace, as far as the scanty materials allowed, the history of that Kingdom and its rulers from the period of the withdrawal of the Roman legions in the early fifth century, or a little before that period, down to the end of the independence of Cornwall in the beginning of the tenth century. To-day I propose to continue the story where I left off, and to say something about the Dukes and Earls of Cornwall down to the present day. It is not altogether an inappropriate subject for the year in which the present Duke of Cornwall made his first official visit to his Duchy.

The so-called conquest of Cornwall by the Saxons was a rather vague matter. As I told you last year, Devon and those parts of Somerset and Dorset which had formed part of the Kingdom of Damnonia were gradually acquired by the Kings of Wessex, and at last in 936 Athelstan drove the Britons out of Exeter and set the Tamar for their boundary. The last King of Cornwall whose name it certainly recorded was Dwrngarth or Doniert, who, according to the Welsh chronicles, was drowned in 875, and whose tombstone is probably in St. Cleer parish. The Huwal,

King of the West Welsh, who according to the Anglo-Saxon Chronicle submitted to Athelstan in 926, was, I think, not, as has been commonly said, a King of Cornwall, but the celebrated law-giver, Hywel Dda, Howel the Good, King of South Wales, who is said in the Welsh Chronicles to have left his kingdom and gone to Rome in that year.

Before the end of the ninth century there seems to have been a good deal of "peaceful penetration" by the Saxons in Cornwall. Land was acquired in various places, sometimes of considerable extent, not apparently by conquest but by peaceable settlement. Alfred left by his will large estates in East Cornwall, and when we get to the tenth century manumissions in the Bodmin Gospels we find a large number of landowners with Saxon names, but also landowners with Celtic names. In the middle of the tenth century (967) we find King Edgar granting land as far west as the manors of Lesneage and Trabo in St. Keverne (which afterwards became the property of St. Michael's Mount) to one Wulfnod Rumoneant, a man with two names, one Saxon and one British. There are many place names in which *Saeson* or *Saes*, Saxons or Saxon, are epithets—Tresawson, Tresowes, Carsawson, Carsawes, Coswinsawson, and others, and in East Cornwall one finds parishes in which Saxon place-names are in a majority, side by side with parishes full of Cornish names. The former probably mark early Saxon settlements. At some date before 870, and therefore before the death in 875 of Dwrngarth, the last recorded King of Cornwall, Kenstec, Bishop of the Cornish nation in the monastery of Dimurrin, made his submission to Ceolnoth, Archbishop of Canterbury, which would no doubt include an acceptance of the Roman Easter. Yet in Leofric's missal there is a mention of the existence of "errors" in the Cornish Church as late as 909. It would seem, therefore, that the submission was very incomplete, which would imply that the civil submission was

also incomplete. Bede tells us that in 731 the Britons subject to Wessex, that is to say, in part of Devon and in Somerset, adopted the Roman Easter, and no doubt they were compelled to do so by the West-Saxon King. The fact that the Cornish were not made to do the same shows that as late as 909 there must have been considerable independence.

It seems probable, however, that from the reign of Athelstan onward the Dukes or Ealdormen of the Western Provinces, who are commonly called in the chronicles "Dukes of Devon," though their jurisdiction included parts of Somerset and Dorset, had some sort of rule over Cornwall also. The first of these who is connected with Cornwall seems to be a man of great note, Ordgar by name. His daughter Elfrida was the second wife of King Edgar. There is a romantic but not very creditable story told by William of Malmesbury about Edgar and Elfrida, and she does not appear to have been an estimable person at any time. She is chiefly known to history as the "wicked step-mother," who caused King Edward the Martyr to be stabbed in the back at Corfe Castle in Dorsetshire in order that her son, the disastrous Ethelred the Unready, might be King. Ordgar appears to have had at least three sons, Ordulf, Eadulf and Ælfsie. Eadulf, according to William of Malmesbury, was a man of gigantic stature and strength. Ælfsie or Alphsius is said by Carew to have founded Launceston, and Ordulf completed his father's work in founding Tavistock Abbey, which is called "Ordulf's Minster" in the record of its sack by the Danes in 997 in the Anglo-Saxon Chronicle, Florence of Worcester and Henry of Huntingdon. In the Bodmin manumissions "Ordgar Dux" liberates a woman called Wencenethel at the Altar of St. Petrock, for the good of his own soul, in the presence of Wulfsige the Bishop and others. Ordulf sets free Gluinen for the good of the soul of Ælfsie, and Ælfsie frees a number

of serfs for the good of his own soul and that of his brother-in-law, King Edgar. Ælfsic also appears as a witness to another transaction, and in this case he is called "Preses," which would seem to mean that he was governor of a province of some sort. Ordgar died in 971, and he and his son Eadulf were both buried at Tavistock. Ordgar certainly seems to have included part, if not all of Cornwall in his Duchy and his sons evidently had possessions there, though it is not quite clear that they were ever really Dukes. Possibly they left no descendants, for very soon after Ordgar's death we find Æthelward described as Duke of Devon and Cornwall. There is little doubt that this was Æthelward the historian, whose Chronicle is well known. He describes himself as a great-great-grandson of King Ethelred, the elder brother of Alfred, and dedicates his book to his kinswoman Matilda, daughter of the Emperor Otto the Great, who had married Edith, daughter of Edward the Elder, the son and successor of King Alfred. The Chronicle is rather a remarkable performance and is written in the turgid and not always correct Latin which the Anglo-Saxons affected, but it is interesting that a man of his position and period, who was also a fine fighting man, should have been able to write such a work at all. The only known M.S. of it perished in the fire of the Cottonian Library in 1731, but luckily, for it contains details which came within the writer's own knowledge and are not found elsewhere, it had been published by Sir Henry Savile in 1596. Not much is known of Æthelward's connection with Cornwall. In 977 land there was granted to him by Edward the Martyr. In the Bodmin manumissions Æthelred liberates Ælfgyth "for the good of her own soul and that of her lord, Æthelwerd the Duke, on the bell of St. Petrock in the town which is called Lysecernyt." We call it Liskeard now, and I wish I knew what had become of that bell. Probably it was one of the common type of

Celtic handbells. The twelve witnesses have all of them Saxon names, except two of the four "cleries of St. Petrock," who come at the end of the list. I think it is probable that the first eight are priests and others at the Duke's court—"Lys-cerruyt" probably means "the fortified court"—and that the "cleries of St. Petrock" had brought the bell from Bodmin to represent the Altar of St. Petrock on which the manumissions were usually made, rather than give the Duchess the trouble of a twelve miles journey through the woods and over the moors. Later Æthelwærd the Duke went over to St. Petrock's minster to confirm the manumission, with Buruhwold the Bishop as witness, which helps to give a date, 1018-1027. This entry is the only information that we have of the name of Æthelwærd's wife. The name of "Æthelwærd Dux" also appears as a witness to a manumission by King Ethelred. His name appears among those of witnesses to various charters of Saxon Kings down to the end of the tenth century, including the grant by Ethelred of liberties to the see of Cornwall in 994, but, in spite of the opinion given by Haddan and Stubbs (vol. 1, p. 683) and by Freeman in his history, it is not quite certain that he is the "Æthelweard Dux" who witnesses Canute's grant to Burhwold Bishop of St. Germans in 1018, or the "Æthelweard ealdorman" who was outlawed, according to the Anglo-Saxon Chronicle, in 1020. His son Æthelmar or Aylmer is described as "ealdorman" and "Domnonie comes" in 1013, when with the other western thanes he makes his submission to Sweyn, King of the Danes, and he witnesses Ethelred's confirmation charter of Tavistock Abbey as "Athelmere Dux," from which it would seem that he had succeeded to his father. Æthelmar was the founder of Cerne Abbey in Dorsetshire and in the grandiloquent Latin of the period describes himself in the foundation charter as "Æthelmar, son of

Æthelwærd, the satrap of King Ethelred." Leland calls him "Ailmer comes Cornubiæ" and says that he founded Cerne in the time of King Edgar, but he is mistaken there, for it was in the time of Ethelred.

It is not quite clear who was the next Earl or Duke. A vague "Algar Earl of Cornwall" is mentioned by Leland as founding the Abbey of Bruton in Somerset in 1046, and Hals and others speak of a pre-Conquest Earl Algar rebuilding the Church of St. Petrock at Bodmin, establishing Black or Augustinian Canons there and giving them rights over the river Alan from Camelford to Padstow. Hals also says that he gave them their well known arms of the three salmon, which sounds improbable. The founder of Bruton Abbey was certainly Æthelmar and the date was more probably 1005, and the Algar who rebuilt St. Petrock's was a much later man, who is perhaps the Algar mentioned in Domesday as holding manors in Cornwall under the Earl of Mortain. It is therefore uncertain who, if anyone, held the Dukedom or Earldom between Æthelmar and the Earl who was appointed by Edward the Confessor.

In 1051 Odda, whose name is a Saxon form of Otho, Odo or Otto, was made Earl of Devon, Somerset, and the Wealas, i.e., the Cornish. Very little is known of him. In 1052 Edward the Confessor set him and Earl Raulf over the fleet at Sandwich, which is a far cry from Cornwall. He had a brother named Ælfrie, who died in 1053, and he himself died in 1056, having just previously become a monk in the Abbey of Pershore, where he was buried.

It is probable that if Condor, Candor, Cador or Cadoc, the alleged Earl of Cornwall at the time of the Norman Conquest, had any real existence, he succeeded Odda. The only authority for his existence seems to be Camden, who does not say where he got his information. He says that Condor submitted to William, but was later deprived of his Earldom, which was given to Robert, Earl of Mortain,



the half-brother of the Conqueror, that he had a son, Condor or Cadoc, whose daughter Agnes married Reginald, natural son of Henry I, and that he bore sable, fifteen bezants, for his arms. All this has been repeated over and over again with fanciful additions by Carew, Hals, Davies Gilbert and others, but there does not seem to be any contemporary evidence for any of it. The forfeiture of the Earldom is not improbable, for in 1075 there was a rising in Devonshire in which the Cornish joined, and Condor, if there was such a person, may have been implicated in it. But the wife of Reginald FitzHenry is reported elsewhere to have been the daughter of William FitzRichard, a noble of Cornwall, who would seem to have been a Norman. The name Condor, Cador or Cadoc is certainly Celtic, and not very likely to have been borne by a Saxon Earl. It is possible, though there is no evidence one way or the other, that Condor was of the old Royal House of Damnonia, and that he was able to start a small "Celtic revival" in Cornwall in the troublous times which immediately preceded the Norman Conquest. It is not unlikely that the native Cornish kept up a secret allegiance to their old royal House, and the troubles of Harold's short reign would give them their chance. But this is pure conjecture.

It has been asserted that Brian of Brittany, who had accompanied William to England, and had succeeded in putting down an attempt of the sons of Harold in Devonshire, was the first Earl of Cornwall after the Conquest, and that in 1070 his possessions in Cornwall and elsewhere were granted to Robert, Earl of Mortain. This is inconsistent with the legend of Earl Condor, but seems to rest on better evidence.

It has been stated also that Robert of Mortain was never Earl of Cornwall at all, but only the tenant in chief of some 250 manors therein. This, however, does not seem probable. The manors which he held were largely the old Royal manors,

and he certainly exercised jurisdiction in Cornwall. His son William succeeded him in 1097, but his Earldoms were forfeited in 1106 in consequence of his having taken part in an unsuccessful rebellion against Henry I. in favour of Robert of Normandy. The Earldom of Mortain was given to Stephen of Blois, afterwards King Stephen, son of Adela, daughter of William the Conqueror, but it does not appear that the Earldom of Cornwall was granted to anyone, but was probably retained by the Crown, until Stephen in 1140 granted it to Reginald, the illegitimate son of Henry I. already mentioned. Some say, however, that Alan, Earl of Richmond, son or grandson of Brian of Brittany held it from 1135 to 1140. Reginald FitzHenry had been an adherent of his own half-sister, the Empress Matilda, but seems to have changed sides freely, besides engaging in a little rebellion on his own account. After the battle of Lincoln in 1141 not much is heard of him until the reign of Henry II., when he appears as a person of considerable importance, and among other things endeavoured unsuccessfully to bring about a reconciliation between the King and Thomas Becket, afterwards St. Thomas of Canterbury. He died at Chertsey in 1175, leaving four legitimate daughters and two illegitimate sons. The Earldom of Cornwall was retained by the King in his own hands for the use of his son John, afterwards King, on whom he eventually conferred it, but Henry Fitz Count, one of Reginald's natural sons, was appointed Constable of Launceston and granted the Earldom in farm. Henry Fitz Count continued to farm the revenues of the Earldom until 1220, though from the accession of John to the throne in 1199 the Earldom itself had been vested in the Crown. In 1227 the Earldom of Cornwall with all its jurisdiction and revenues, which then, as now, were considerable, was granted to the most famous of all our Earls, Richard, the younger brother of Henry III. A full account of this remark-

able man would require an address all to itself. For a time he was one of the most eminent men in Europe, and was also one of the richest, for besides holding the Earldom of Cornwall, the mines of which were producing for him a large income, he was also Earl of Poitou, and held many other estates. He was a successful military commander and did good service in the Crusades and other wars, and in 1257 he was elected "King of the Romans" and was crowned at Aix-la-Chapelle on Ascension Day of that year. How far he can be really said to have been effectively Emperor of the Holy Roman Empire is uncertain. He was certainly elected, but so apparently was Alfonso of Castile, but neither was crowned as Emperor. Yet until his death in 1272, after which Rudolph of Hapsburg was elected, there was no other Emperor. The period from the deposing of Conrad, the last Emperor of the House of Hohenstaufen, in 1250 to the accession of the first Hapsburg in 1273 was a very disturbed one, and Richard was probably nothing more than a nominal Emperor. He is said to have brought about his election by the most barefaced bribery of everyone concerned, from the Pope downwards.

Edmund, son of Richard, succeeded his father as Earl of Cornwall. Henry, the eldest son of Richard who grew up—for four others died in infancy—had been murdered by Guy, son of Simon de Montfort, in the Church of St. Sylvester at Viterbo. Chiron the Centaur showed the murderer to Dante and Virgil in the seventh circle of the Inferno.

Mostrocci un' ombra dall' un canto sola

• Dicendo : Colui fesse in grembo a Dio

Lo cor che in sul Tamigi ancor si cola.

Inf. xii. 118-120.

[He showed to us a shade on one side by itself,

Saying : He cleft asunder in God's bosom

The heart that yet upon the Thames is honoured.]

On the death of Edmund in 1300 the Earldom lapsed again to the Crown, which held it until in 1307 Edward II. gave it to that amazing boulder Piers Gaveston. Gaveston was beheaded in 1312, and again the Earldom lapsed to the Crown. Edward III. conferred it in 1329 on his younger brother John of Eltham, who died in 1337, the last Earl of Cornwall.

The rest of the story is of common historical repute, and must be little more than a list of names, for the history of the Dukes of Cornwall is the history of England, and there isn't time to include all of that in this address.

In 1337 Edward III. created his eldest son, Edward Prince of Wales, known as the Black Prince, Duke of Cornwall, granting the Dukedom to him and to the eldest sons of his heirs, the Kings of England, in hereditary succession. By this creation it came about that, as you know, the eldest son of the King of England is Duke of Cornwall from his birth, or from his father's accession, and needs no further creation, whereas it is necessary for each to be separately created Prince of Wales before he can attain to that dignity. There is always an interval, long or short, when the son of the King is Duke of Cornwall but not Prince of Wales. But it seems that the son of a Duke of Cornwall who has died in his father's lifetime does not become Duke without special creation.

"Edward the Black Prince died before his father and left behind him Richard, his only son, who after Edward the Third's death reigned as King." (2 Hen. VI. Act II. Sc. 2.). As Shakespeare, more prosaically than usual, puts it.

Richard was specially created Duke of Cornwall on his father's death in 1376, and on his accession in 1377, the Dukedom temporarily lapsed to the Crown. He had no son, and, to quote Shakespeare again, "Till Henry Bolingbroke, Duke of Lancaster, the eldest son and heir of John

of Gaunt, seized on the realm : deposed the rightful King," in 1399, the Duchy of Cornwall was merged in the Crown.

The next Duke, at any rate *de facto*, was Henry, son of Henry IV., afterwards Henry V., the victor of Agincourt, as the first Duke had been the victor of Crecy. Again from his accession in 1413 to the birth of his eldest son in 1421 the Dukedom was merged in the Crown. Henry, afterwards Henry VI., was Duke in 1421 and 1422, and was apparently never created Prince of Wales. Then occurred another period, and a long one, from 1422 to 1453, when the Dukedom was again merged in the Crown. Edward, son of Henry VI, born in 1453, was the next Duke. His father was deposed in 1461 by Edward IV., who was really the rightful King, so that this Edward ceased to be Duke, even *de facto*, then. He was killed in 1471, according to Shakespeare by Edward IV. and his brother Richard. Edward, the son of Edward IV., was born in November, 1470, which was in the short interval (8 October, 1470, to April, 1471) when Henry VI. was restored. From his birth to his father's death in 1483 he was *de jure* Duke, and, except for the first five months of his life, *de facto* also. For a short time in 1483 he was King as Edward V., and was, with his brother Richard, murdered in the Tower, the usual story being that it was by order of his uncle, Richard III., but some historians, notably my friend the late James Gairdner, have charged Henry VII. with the deed. Richard, Duke of Gloucester, became King in 1483, and his son Edward, born in 1473, became Duke. The latter died suddenly in 1484, and there was no Duke of Cornwall again until the birth of Arthur, son of Henry VII. and of Elizabeth, daughter of Edward IV., in 1487. Arthur died in 1502 and was succeeded by his younger brother Henry, afterwards King Henry VIII. Seven years later the Dukedom was again merged in the crown by the accession of Henry VIII. Catharine of Aragon, the



first wife of Henry VIII., had several children who died within a few days of their births, besides the one daughter, Mary, who lived to become Queen. Two of these were sons; one, christened Henry, was born 1st January, 1511, and died on February 22nd. The other was christened in June, 1514, and died immediately afterwards. These were successively Dukes of Cornwall during their very short lives, but were never Princes of Wales. It is said, though the fact is disputed, that the aforesaid Princess Mary was created Duchess of Cornwall and Princess of Wales in her own right, dignities which she resigned on the birth of her half brother Edward in 1537. But there was a son of Anne Boleyn, Henry, who was born and died in November, 1534, who, if the marriage of his parents be accounted valid, was Duke of Cornwall during his life. Edward, the son of Henry's third wife, Jane Seymour, (if Anne Boleyn was ever his lawful wife, since Catharine of Aragon was alive when the King married her) was Duke of Cornwall until his father's death in 1547. Apparently he was never Prince of Wales. Then there was an interval of 56 years, the longest period of the Duchy being merged in the Crown. Henry, the eldest son of James I., was the next Duke, from the accession of his father in 1603 to his death in 1612, when he was succeeded by his brother Charles, afterwards Charles I. Charles succeeded his father as King in 1625 and the next Duke was his first son, Charles, who died as an infant in May, 1629, and after a year was succeeded by his brother Charles, afterwards Charles II., who was Duke of Cornwall from his birth in 1630 to his father's murder, or martyrdom, as we cannot choose but call it in this parish,\* and his own accession on 30th January, 1649—for his regnal years are dated from his father's death. From 1649 until the 10th of June, 1688, there was no Duke

\* Falmouth, the Church of which was dedicated in 1664 in honour of King Charles the Martyr.



of Cornwall. Charles II. had no legitimate son, and the elder children of James II. and Mary Beatrice of Modena, who, lived, if at all, but a very short time, were all born before the King's accession. But on the 10th June, 1688, was born that excellent but very misfortunate Prince, James Francis Edward, who later was known for sixty-five years to a very large number of most respectable Englishmen as King James III. and to perhaps a larger but possibly less reputable number by the rude title of "The Old Pretender." He was certainly *de facto* as well as *de jure* Duke of Cornwall from his birth until some vague date at which his father was alleged to have abdicated (which he never did) or to have been deposed. If one were to go into the unsatisfactory question of "what might have been" if something else had not happened, and to follow the fortunes of the excluded lines of James II. and his sister Henrietta Duchess of Orleans, one would find that there would have been four princes after James Francis Edward who, but for that exclusion, would have been Dukes of Cornwall, the first of whom was Charles Edward, the "Bonnie Prince Charlie" of 1745; the second, Francis V. Duke of Modena, who lost the Duchy which he really held in 1859; the third, one who has unhappily been one of our most effective enemies during the war; and the fourth, the son of the third. But in the line which took their place there have been six. It is not necessary to do more than name them. During the reigns of William of Orange and Anne there were none. Then followed: George II. from his father's accession in 1714 to his own in 1727; Frederick, son of George II. (born 1707) from his father's accession in 1727 to his death in 1751. George, son of Frederick, afterwards George III., according to the rule already mentioned, did not become Duke at his father's death, so the Dukedom was merged in the Crown until the birth of his son George, afterwards George IV., in 1762. He was Duke

of Cornwall from his birth to his father's death in 1820. During his reign, that of his brother William IV., and the first four years of Victoria, that is to say from 1820 to 1841, the Dukedom was merged in the Crown. Since then this has not happened. Albert Edward, son of Victoria, was Duke from his birth in 1841 to his accession as King Edward VII. in 1901, a record time of 59 years, though George IV ran him close with 57 years. His son George, Duke of York, now King George V., became Duke of Cornwall from his father's accession in 1901 to his own in 1910, when he was succeeded by his son Edward Albert Christian George Andrew Patrick David, the present and 24th Duke. Of his twenty-three predecessors ten died before their fathers and so never succeeded to the crown, and one, though he survived his father by some 65 years, was never *de facto* King.

This then is the history of the succession of the Earldom and Dukedom of Cornwall from the extinction of the ancient Celtic monarchy to the present day. In the Saxon and early Norman period the title of Earl or Duke of a county, province or district carried with it not only the possession of estates therein but also jurisdiction or governorship, varying no doubt in power according as the King of the time was weak or strong. The Earl or Duke was a sort of Lord Lieutenant of his county or duchy and had under him a Viscount (Vice-comes—vice-earl, as he was called in Latin), or, as he was called in English, a shire-reeve or sheriff. Stephen seems to have been the first King to create merely titular Earls—*pseudo-comites*, sham Earls, as one old chronicler calls them; but gradually these came to be the only sort, so that now the Duke or Earl of a county or place has no necessary connection whatever with it, with one exception, the only surviving effective separate Dukedom in Great Britain—Cornwall. From time to time during the 800 years from 1100 to 1900 this

Earldom or Dukedom has been merged in the Crown for what amounts to some 350 years, but it has always gone on, the King having been during those years himself also Duke of Cornwall, and from 1337 onwards, when the Sovereign has had a son and heir, the Duchy has been his. To no other province of Great Britain has such an honour been done.\*

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### Table

*Shewing the Dukes and Earls of Cornwall from the Tenth Century onward.*

Dukes or Ealdormen of Devon and Cornwall :—

Ordgar, d. 971.

Ordulf, son of Ordgar, 971.

Æthelwærd, duke in 994.

Æthelnuar or Aylmer, son of Æthelwærd, duke in 1013.

Odda, 1051-1056.

Earls of Cornwall :—

[Condor, circ. 1066-1075 ?]

[Brian of Brittany, 1070 ?]

Robert Earl of Mortain, 1070-1097.

William Earl of Mortain, 1097-1106.

Earldom merged in the Crown, 1106-1135 or 1140.

[Alan, Earl of Richmond, 1135-1140 ?]

Reginald Fitz Henry, 1140-1175.

Earldom merged in the Crown, 1175-1189.

John, afterwards King, 1189-1199.

Earldom merged in the Crown, 1199-1227.

Richard, King of the Romans, 1227-1272.

\* The Duchy of Lancaster, which has some similar jurisdiction, as well as a "chancellor" of its own, has been merged in the Crown since the accession of Henry IV. It produces a considerable revenue also.

Edmund, son of Richard, 1272-1300.

Earldom merged in the Crown, 1300-1307.

Piers Gaveston, 1307-1312.

Earldom merged in the Crown, 1312-1329.

John of Eltham, son of Edward II., 1329-1337.

Dukes of Cornwall :—

- I. Edward the Black Prince, son of Edward III., 1337-1376.
- II. Richard, afterwards Richard II., 1376-1377.  
Dukedom merged in the Crown, 1377-1399.
- III. Henry, afterwards Henry V., 1399-1413.  
Dukedom merged in the Crown, 1413-1421.
- IV. Henry, afterwards Henry VI., 1421-1422.  
Dukedom merged in the Crown, 1422-1453.
- V. Edward, son of Henry VI., 1453—1461.  
Dukedom merged in the Crown, 1461—1470.
- V.(bis) Edward, son of Henry VI., again, 8 Oct. 1470 to April 1471.
- VI. Edward, afterwards Edward V., 1471-1483.  
Dukedom merged in the Crown, 1483.
- VII. Edward, son of Richard III., 1483-1484.  
Dukedom merged in the Crown, 1484-1487.
- VIII. Arthur, son of Henry VII., 1487-1502.
- IX. Henry, afterwards Henry VIII., 1502-1509.  
Dukedom merged in the Crown, 1509-1510.
- X. Henry, son of Henry VIII., 1 Jan.-22 Feb. 1510.  
Dukedom merged in the Crown, 1510-1514.
- XI. A son of Henry VIII., born and died June, 1514.  
Dukedom merged in the Crown, 1514-1534.
- XII. [Henry, son of Henry VIII. and Anne Boleyn, November, 1534 ?]  
Dukedom merged in the Crown, 1534-1537.
- XIII. Edward, afterwards Edward VI., 1537-1547.  
Dukedom merged in the Crown, 1547-1603.
- XIV. Henry, son of James I., 1603-1612.

- XV. Charles, afterwards Charles I., 1612-1625.  
Dukedom merged in the Crown, 1625-1629.
- XVI. Charles, eldest son of Charles I., born and died  
13 May, 1629.  
Dukedom merged in the Crown, 1629-1630.
- XVII. Charles, afterwards Charles II., 1630-1649.  
Dukedom merged in the Crown, 1649-1688.
- \*XVIII. James, son of James II., afterwards *de jure*  
James III., 1688-1689.  
Dukedom merged in the Crown, 1689—1714.
- XIX. George, afterwards George II., 1714-1727.
- XX. Frederick, son of George II., 1727-1751.  
Dukedom merged in the Crown, 1751-1762.
- XXI. George, afterwards George IV., 1762-1820.  
Dukedom merged in the Crown, 1820-1841.
- XXII. Albert Edward, afterwards Edward VII.,  
1841-1901.
- XXIII. George, afterwards George V., 1901-1910.
- XXIV. Edward, son of George V., 1910.

\* The exact time during which James, son of James II., was *de facto* as well as *de jure* Duke of Cornwall is rather vague. He was born on 10th June, 1688, and his father left England never to return (though he did go later to Ireland) on 23rd December, 1688. According to the principles (if any) of the Revolution the Throne became vacant by the withdrawal of the King from the realm, but it was not declared vacant by both Houses of Parliament until February, 1689, when the Crown was offered to William and Mary of Orange. If there was anything in these principles, there was a period during which James had ceased to be Duke of Cornwall and yet the Dukedom was not merged in the Crown, because there was no Crown for it to be merged in. There was in fact an interregnum in both Crown and Duchy, which, whatever the Convention Parliament might pretend, is impossible. Therefore, even accepting the validity of the Revolution, one must needs count James to have been *de facto* Duke until a successor was appointed, in this case until there was a new King. But for the exclusion James would have held the Dukedom until his father's death in 1701.

## Ship-Modelling as a Craft.

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*By R. Morton Nance.*

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Every true Briton's breast is understood to throb and glow at the bare mention of the words "sea" and "ship," and even without a war to bring it home to each of us personally, we all had the idea that ships had always been vital to our existence as an island state; yet as compared with his interest in other things of the past how slight and how vague is the interest in bygone shipping displayed by the average inhabitant of the British Isles. A glaring anachronism in a picture representing the architecture, armour, costume, furniture, coachbuilding, even, of any period within the past thousand years or so, would at once be pointed out by several people in any mixed gathering and it is a question whether the artist would ever be allowed to live down his mistake: yet one of our foremost Academicians was allowed, in painting a supposed incident in the boyhood of one of our Elizabethan sea-heroes, to enrich his foreground with a supposed toy galleon that was at least a century out of his period, that was not English but Dutch, a copy evidently of one of the Church-ships that were once so common, and that finally was spoilt as a ship of any time or country by having a sail painted in an impossible place. I choose this example because it happens to have been one of the most popular pictures of the most popular of painters—no less than the achiever of





FLEMISH CARRACK, c. 1450.

(By courtesy of the Editor of "The Studio") (Photo by Mr C. Harrison, Hayle).



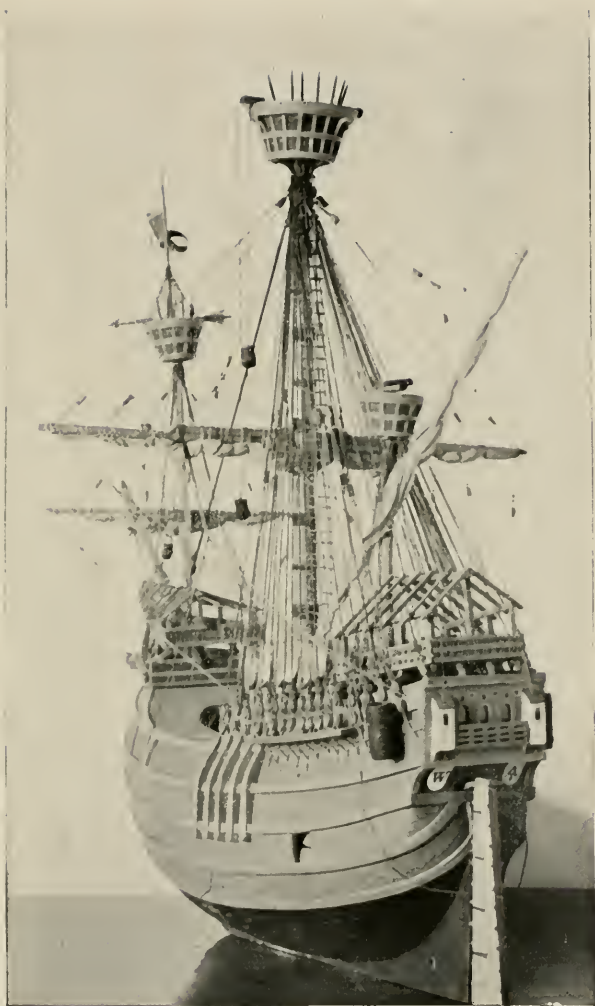
“Bubbles”—and on the score of attention to detail it has never seemed to offend a single critic. No—it sounds a little wild, but is, all the same, literal truth—the islanders whose proud boast it is that “Britannia rules the waves,” while they would scorn the notion of mounting Marlborough on anything less than a shapely and fitly-caparisoned *horse*, would be quite content, spite of the sea-salt in their blood, that the *ship* that served as sea-steed to Drake, Blake or Anson should be represented by what would be the nautical equivalent of perhaps the chimera in Natural History, or, as an approach to realism, possibly a cow-headed mule, with its hind legs before.

The reason for this is not obscure. Of course we all pass through the world without ever truly seeing any objects beyond those that represent our real interests; the artist even, whose business is seeing, has to select and to simplify—life would be too crowded were we all to see walls with a mason’s eye, stairs with a carpenter’s, fields with a farmer’s, trains with a railwayman’s, or even ships with a sailor’s. But there are many degrees of seeing, after all—we all have, from either the practical point of view, the historic, or the romantic, enough interest in a ship to give it our attention during a space that will allow of most of its simple complications soaking into our memories, and a great deal of what seems to be apathy to ships as ships may fairly be set down to the lack of material upon which memory and imagination may work.

We have, it is true, museums in which many fine examples of ancient and modern ship-modelling may be found; but there is not yet any one worthy British Marine Museum where such things can be shown as they should. We have too, now, a Society for Nautical Research with its journal, the *Mariner’s Mirror*, and the old things of the sea are being to that extent attended to; but this is work that is very slow in reaching the general public, and can

never make a very wide appeal, besides which we have some centuries of lee-way to make up. Go to Holland, for instance, and you see in the sculptured gablestones of the dead cities of the Zuyder Zee, in the tapestries of Middelburg, in the windows of Gouda, in the paintings or models of every museum, almost at every turn, ships, ships, ships—memorials of days as glorious to little Holland as to ourselves, when the sea-power of Spain and Portugal fell in fair sea-fight into the hands of the better seamen of the north. No Dutchman can be excused for forgetting what the ships of his greathearts were like; but when we would visualize for ourselves our *Golden Hind* or our *Revenge* we may wander long in the ports from whence they sailed, to find at last that no Elizabethan Englishman had sufficient interest in the outward aspect of them to leave us the barest sketch of either. A Dutchman spared time from his own ships, once, to make some little pictures of the *Golden Hind*, to decorate an atlas. A Dutchman, too, was found willing to commemorate our common victory over the Spanish Armada by designing the great tapestries so unhappily destroyed by fire with the old House of Lords: but no Englishman seems to have thought it worth while to perpetuate for us the real *Ark Royal* as she looked in the fight. If the tale is true, a Cornishman did think it worth while to make a model of a lesser Armada-fighter, the *Francis of Foy*, that seems to have been in existence down to recent times. Whether genuinely Elizabethan or not, as an old British-built ship-model this was a thing to keep; but if it had been even a fair imitation of the *Francis* herself, Fowey lost there a treasure.

Besides this *Francis* model that Carew mentions as having been at the Rashleigh manor house (afterwards named the Ship Inn, and, as supposed, from the continued existence there of this ship model) there are tales of yet another model at Fowey—one set inside a railing of iron



**FLEMISH CARRACK, c. 1450.**

*(By courtesy of the Editor of "The Studio"). (Photo by Mr. C. Harrison, Hayle).*





before the Rashleigh monument in the church. This is especially interesting as suggesting a survival in Cornwall of the old custom of hanging little ships in seaport churches. Such church-ships were certainly common enough at one time in the West Country, for Bristol in one chapel alone had thirty-two of them hanging from its roof, some in wood, some in silver; but that was in the fifteenth century—at a time when, as is shown in a picture by Carpaccio, Venetian carraacks and galleys were also to be seen in miniature under shelter of a church. Most of our British models, banned as superstitious thank-offerings, must have disappeared at the Reformation. *Ex voto*, no doubt, they were, like ships that are still hung in the churches of Normandy or Brittany; but that there is no real quarrel between the church-ship and Protestantism is shown by the fact that it is equally an institution in Lutheran countries like Denmark and Norway, where ships are still hung in churches not in fulfilment of vows, but merely as memorials of gratitude or even as historical emblems. Some years ago I happened to be in Copenhagen just in time to see a very beautiful model of an old Danish ship that was being exhibited at short range before being finally slung in church as a memorial of the seventeenth-century seaman Niels Juul. Ships old and new hang together in many Danish churches, and I remember seeing in one a modern gunboat and a dainty little paddle steamer amongst the older sailing craft. As memorials, too, rather than as votive offerings, the famous ships of Haarlem Cathedral were hung. These commemorate the breaking of the harbour chain of Damietta in Egypt by ships armed at their stems with great iron saws, as noted by the poetic traveller Huet in 1652 :—

“ At Haerlem, our next stage, just fame,  
For the first printing press they claim,  
And for the ships, with saw-like prows,  
Fatal to their Pelusian foes.” (*Translation*, 1770).

Our own Evelyn, too, describes these Haarlem ships in his diary, but soon after his visit to them they must have been found to be in a bad state of repair, for, as they now hang, one only is left of the original saw-armed ships, and that shows signs of having been newly-rigged late in the seventeenth century, at about the same time that her companion vessels were built, and when a wave of church-ship making seems to have swept over Holland and its neighbouring countries. Even where churches shut their doors upon ship models there are sometimes public buildings to welcome them, the best instances of this being in North Germany, where the Shipper's House at Lubeck and the town hall of Bremen are both well stored with old chain-shung shippikins, if not quite as ancient as they would have you believe, yet quite respectably so.

Here in Britain, however, unless an old model at Leith (representing a Danish ship that may well have been built by a Scotchman in the service of Christian IV.) is an exception, ship models had no such luck, and if any of our old Church-ships survived the zeal of the first reformers or the destructive enthusiasm of the later Puritans, the still more dangerous classical notions of the eighteenth century, that classed all the products of our own traditional arts, ship-models included, as "tawdry rubbish," must have sent the last of them to the sexton's bonfire. Two facts, at all events, stand out; one that in days past the people, here as elsewhere in Europe, were constantly being reminded in their common meeting-places of the glory of the ship and of its importance to their common life; another that of these public memorials so clean a sweep has been made that the ship-model is now regarded generally as either a domestic nuisance, a monument of wasted time, to be smuggled up like the stuffed canary, the murdered butterflies, the plaster vase of feather flowers, wax fruit, or other dismal relics, under a glass case, or at best as a mere mu cum

exhibi , still glass-cased, and looked upon as an “ instructive object ” suitable perhaps for the inspection of schoolboys.

This leads me to the purpose of this paper, which is to question whether it might not be possible to restore to a larger extent than is within the power of any single person the old artistic and emblematic uses of the ship-model ; and while producing beautiful reminders of sea-strength to be hung aloft in churches, or, if not there, in halls, public or private, so to provide with a craft some that war-experiences have left incapable of following a more strenuous profession.

The work is of a sort that requires time, skill and patience, and the sale of its finer products—the grand old galleons in full sail and splendid with colour and gilding, guns run out, and flags all flying, or the careful reconstructions of ancient types never yet represented in the museums, but only to be built up after long research—must always be slow and uncertain. It is work to be adopted by pensioners rather than by those who have no other source of income, or as a branch of the work of village institutes perhaps ; but the earlier period of apprenticeship to it would be served in the less hazardous production of simple toy boats.

Such boats, made by men who knew the sea, and reproducing local types of fishing craft, should fear little from the competition of the shockingly crude toy-boats that come to our shops now to be sold at prices that should allow of better work ; and as with growing skill these little boats were made to scale, in full detail, they should claim attention from those who have grown beyond paddling in sea-pools to build romance around a toy boat, either as holiday trophies, as correctives of drawing for artists who are not above such trifles, or as things of interest and beauty in themselves.

Being myself something of an enthusiast for the ship-

model, it is difficult for me personally to estimate fairly the chances of such a scheme ; but it has seemed to me that, given a good backing at its start, it might go on for many years bringing home-employment, and that of a most desirable kind (as being hand-and-brain work with enough of variety to prevent its ever becoming too mechanical and wearisome, and at the same time work that if necessary can be carried on intermittently) to some who would welcome it. Its raw material is of the cheapest and most easily procurable, it requires no great working space and very few tools, and could quite well be carried on by isolated workers. What it must have is, firstly, sound organisation, a thing that could be assured by the help of many who have tested their capacity in that direction, and, secondly, what happens also to be available in Cornwall, a certain amount of help on the technical side from a modeller, and on the historical side from a student of marine archaeology. All this, of course, amounts to no more than a query, or at most a suggestion ; but on the chance of its reaching fruitful soil it has seemed worth while to take the opportunity offered me by the Royal Cornwall Polytechnic Society of dropping this seed. Whether the germ is to perish or to play on its own tiny scale the part the acorns took in giving us our " wooden walls," and raise new miniature fleets, it rests with others to decide.

As showing the sort of work that might come after practice, or without it to anyone capable of using a few tools and following a plan intelligently, I add to these words some photographs of models made by myself or from my plans. Better still would have been a few specimens of actual miniature boats and ships ; but these too I am promised an opportunity of showing under the auspices of the Society on a future occasion. In its earlier days ship-models were a constant feature of the Society's exhibitions, and it would be a very fitting chance that should



**FRENCH SHIP OF WAR, C. 1550.**

(By courtesy of the Editor of "The Studio"). (Photo by Mr. C. Harrison, Hayle).





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make the Royal Cornwall Polytechnic Society the means of introducing their production as a new minor industry in Cornwall.

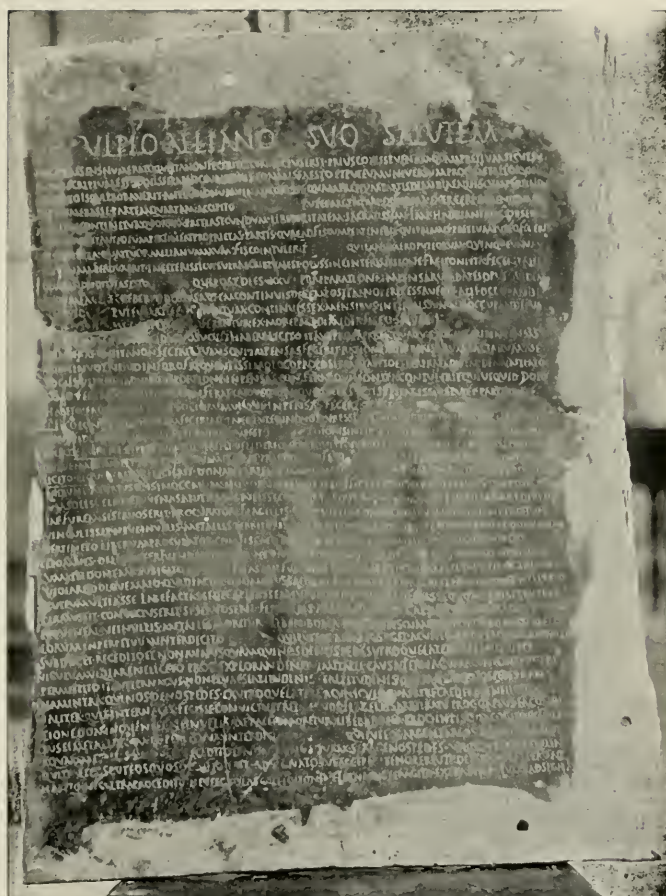
# On the Origin of the Cost Book System.

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*By Professor Henry Louis, M.A., D.Sc., A.R.S.M., etc., etc.*

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There are several points in which the regulations affecting the mines of Cornwall and the adjoining parts of Devon differ from those current in the rest of Britain. For example the mines within the stannaries have always been claimed and retained by the Crown until granted by the latter to the Duke of Cornwall, whereas in the rest of the country, mines of base metal have long belonged to the owners of the soil ; again the " cost-book " system of managing mines is practically confined to the same region. As regards the first-named of these divergencies, it might of course be argued that the King claimed the tin mines as owner of the surface, but this explanation is hardly a complete or satisfactory one. It is more probable that we are dealing here with a survival of mineral ownership from Roman times. Land in Roman provinces was held from the Government, which seemed to have retained its ownership over the minerals. The Government, however, appears to have allowed minerals to be worked by contractors, who seemed to have thereby acquired a share, generally a half share, in the mines opened by them subject to their working continuously. Thus there would arise an ownership of the minerals by the ruling power together



BRONZE TABLET FOUND AT ALJUSTREL, PORTUGAL,

containing mining regulations of the time of the Emperor Hadrian (A.D. 117 to 138).



with strong prescriptive rights as to working the minerals vested in the mining population. This is exactly the state of affairs that we find existing in the stannaries from very early times, as shown by the well-known charters of John and of Edward I., which appear to acknowledge the ancient mining rights of the tinnerns. Whether it be true or not that the Saxon invasion swept away all Roman institutions, wherever the invaders penetrated, and that in the words of Freeman: "In Britain the laws of Rome perished utterly," is a matter of indifference as regards Cornwall, which never began to be Saxonised until the ninth century; as tin mining was an important Cornish industry, even in pre-Roman times, it is easily intelligible that Roman mining legislation should have been firmly established in Cornwall, and that it should have survived there, even although it might have had to yield to Saxon influences in the rest of Britain.

A few years ago it would have been hazardous to have suggested that the cost book system was a part of Rome's legacy to Cornwall, but an interesting discovery made in Portugal places this point beyond doubt. At the well known argentiferous copper mines of Aljustrel, in Portugal, a bronze tablet had been discovered in 1876 beneath a heap of old slag, which gave some interesting particulars of the economic regulations that applied to these mines in Roman times. More recently, however, in 1906, a second tablet was discovered, the inscription on which shows the laws under which mining was carried on in this colony, and presumably also in others, and here it is interesting to note that we find the first traces of a well developed cost book system. The inscription dates from the reign of Hadrian. The relevant portions of the inscription, as given by M.J.B. Mispoulet (*Le Régime des Mines à l'Époque Romaine et au Moyen Âge*), are as follows:—

2.—*Putei argentarii ex forma exerceri debent quae*

haec lege continetur; quorum pretia, secundum liberalitatem sacratissimi Imp. Hadriani Aug., observabuntur, ita ut ad eum pertineat proprietas partis, quae ad fisco pertinebit, qui primus pretium puteo fecerit et sestertia quattuor milia nummum fisco intulerit.

3.—Qui, ex numero puteorum quinque, unum ad venam perduxerit, in ceteris, sicut supra scriptum est, opus sine intermissione facito; si ita fecerit, *alii* occupandi potestas esto.

4.—Qui, post dies XXV. praeparationi impensarum datas opus quidem statim facere coeperit, diebus autem continuis decem postea in opere cessaverit, *alii* occupandi jus esto.

5.—Puteum a fisco venditum, continuis sex mensibus intermissum, *alii* occupandi jus esto, ita ut, cum venae ex eo proferentur, ex more pars dimidia fisco salva sit.

6.—*Occupatori* puteorum socios quos volet habere liceto, ita ut, pro ea parte qua, quis socius erit, impensas conferat. Qui ita non fecerit, tum is, qui impensas fecerit, rationem impensarum factarum a se continuo triduo in foro frequentissimo loco propositam habeto et per praekonem denunciato sociis, ut, pro sua quisque portione impensas conferat. Qui non ita contulerit, quive quid dolo malo fecerit, quominus conferat, quove quem quosve ex sociis fallat, is ejus putei partem ne habeto, eaque pars socii, sociorum, ut qui impensas fecerint, esto.

7.—Et iis colonis, qui impensam fecerint in eo puteo, in quo plures socii fuerint, repetendi a sociis quod bona fide erogatum esse apparuerit jus esto.

8.—Colonis inter se eas quoque partes puteorum, quas a fisco emerint et pretium solverint, vendere quanti quis poterit liceto. Qui vendere suam partem quive emere volet, aput proe., qui metallis praeerit, professionem dato: aliter emere aut vendere ne liceto. Ei qui debitor fisci erit, donare partem suam ne liceto.



These regulations may be translated as follows :—

1.—Silver-bearing shafts shall be worked in the manner contained in this law ; the prices thereof shall be maintained according to the generosity of the most sacred emperor Hadrian Augustus, in such manner that the ownership of that share that shall belong to the Treasury shall belong to him who first offers the price for the shaft and pays into the Treasury the sum of four thousand seterees.

2.—Whoever, out of five shafts, shall have sunk one down to the ore, shall work without intermission in the others, as is written above ; unless he shall do so, others shall have power to occupy the same. .

4.—If anyone, after twenty-five days given to preparation for the expenses, shall have forthwith commenced to carry out some work, but shall afterwards have ceased from working for ten successive days, others shall have the right of occupation.

5.—A shaft having been sold by the Treasury and having lain idle for six consecutive months, others shall have the right of occupying the same, provided that, when ores are drawn from it, one half part shall, as is customary, be reserved to the Treasury.

6.—The occupier of the shaft shall be allowed to have such partners as he may desire, provided that the latter shall contribute to the expenses for that share by which he is a partner. Should he not do so, then he who has made the disbursements, shall for three successive days in the most frequented part of the forum cause the account of the disbursements made by him to be published, and he shall intimate to the partners by the crier that each shall contribute to the expenses according to his share. Whoever shall not contribute, or with evil intent shall have done something so that he may not contribute, or shall deceive one or more of the partners, he shall be deprived

of his share in the shaft, and the share of that partner shall belong to the other partners as they shall have paid the disbursements.

7.—And those colonists who shall have made disbursements in that shaft in which there shall have been several partners, shall be entitled to recover from their partners what shall be shown to have been expended in good faith.

8.—The colonists shall be allowed to sell amongst each other also such shares of the shafts as they may have bought from the Treasury and paid the price thereof, for as much as each one can obtain. Whoever wishes to sell his share or to buy one must make a declaration before the Warden in charge of the mines; it shall not be lawful to buy or sell in other wise. And whoever is in debt to the Treasury shall not be allowed to give away his share.

It will be seen that sections 6 and 7 really contain the essential regulations of the cost book system; from the legal point of view nothing more is required, as we find here the power of making calls upon all the adventurers in a mine for expenses legitimately incurred and of forfeiting the shares of such of the adventurers as do not pay their calls. It is worth noting that such mining partnerships are to be met with wherever the influence of the Roman Empire can be traced and that in a few cases they have survived up to the present time. The mining statutes of Trent, Iglesias, etc., all refer to it, and in Germany we have its survival, though in modified form, in the "*Gewerkschaft*," which was at one time almost identical with the cost book company; we can even trace the introduction of the German terms, for in one of the Trent ordinances, dated 1244, we find the phrase "*quattuor werki, silicet socii affidati*." Again the mining partnerships of the same type as indicated in the Aljustrel Mining Law are not known

to modern Spanish Mining Law, but we find them set out with much wealth of detail in the mining laws of Spanish South America, which were derived from the Ordinances of Phillip II. of 1584, which devote a section to mining partnerships, and enact regulations quite similar to the Roman ones though with more detail. A chapter of the modern Chilian Mining Law (Codigo de Mineria (1888) Titulo XI. "De las Compañias Mineras") practically identical with that of the Argentine Republic of 1886, also includes a set of very similar regulations.

There is thus very excellent evidence that the principles of the cost book system have come down to us direct from Roman times, and that it was the keen minds of Roman legislators that first devised this form of partnership, so admirably adapted to fostering mining enterprise.

# Watt Centenary Commemoration, Birmingham, September 16th-18th, 1919.

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Amongst the famous men who by their inventions and imaginative powers helped to make England supreme in the industrial world, James Watt is perhaps the most important as owing to his scientific and mechanical genius the steam engine was so much improved that it became the means of revolutionising the industries of the country which enabled England in the Nineteenth Century to become the leading engineering country.

Although James Watt was born in Scotland and received his early mechanical training as a mathematical instrument maker in London, it was in Birmingham and Cornwall that he spent the greater part of his life and there his great inventive genius had its full scope to be applied to the solution of the great mechanical problems of his age.

On the completion of his apprenticeship he returned to Glasgow where for some years he was employed at the University and where he took the advantage of applying himself to scientific studies.

At this time the mining industry of Cornwall was perhaps at its zenith, there being over 100 mines working in the country chiefly for copper, which commanded a high price in the market. The engines then employed

for haulage and pumping were the Newcomen pattern, a type that was very wasteful and compared with the latter engines very ineffective. In these engines the steam was admitted at the bottom of the cylinder which forced up the piston; water was then forced into the cylinder to condense the steam and the condensed steam run off and a fresh charge of steam admitted. The duty per ton of coal used was very low and although the value of the ores raised was high, many of the mines as they got deeper were beginning to feel the excessive cost of pumping, etc., very severely; this was to a great extent removed by the introduction of the more economical Watt Engine, which probably saved and preserved the Cornish mining industry.

The attention of Watt was drawn to the steam engine by his being asked to repair and put in working order a model of the Newcomen Pumping Engine that somehow had come into the possession of the Glasgow University. He soon saw that the principle of working this engine was wrong and wasteful and he evolved the separate condensing chamber which led up to the other improvements that resulted in the type known as the Cornish pumping engine which has worked so successfully and economically up to the present time.

Watt at this time was almost without capital or influence, but after a visit to Cornwall he became convinced that his future could be profitably employed in this County. Shortly after he met Matthew Boulton at an hotel and in conversation explained the position. Boulton was so fascinated by the invention that he provided the necessary capital required and put at Watt's disposal his works at Soho, Birmingham, for the manufacture of these engines. Watt returned to Cornwall in 1776 and entered into negotiations with the mine owners to replace the Newcomen engines by those of his manufacture, and in his letters to Boulton (preserved at Birmingham) he states that he

consulted and was well received and assisted in his works by Davies Gilbert, P.R.S., Lord De Dunstanville and Sir Charles Lemon, these distinguished Cornishmen being at the time largely interested in the Cornish mines.

These were the men who with Robert Were Fox were identified with the institution of the Royal Cornwall Polytechnic Society, and took until their deaths an active interest in its work. It can thus be seen why the Society ever since its inception carried on the work started by Watt, and assisted, by means of its exhibitions and financial aid, practically all the important inventions and improvements introduced for the benefit of mining and other industries. The head of James Watt was selected for the obverse of the Polytechnic Medal; the design was taken from the famous sculpture by Chantrey in the Handsworth Church and it was engraved by Wyon, and first issued in 1835. In view of these facts it was thought fitting that the Royal Cornwall Polytechnic Society should be represented by a delegate at the Watt Centenary Commemoration held at Birmingham.

The Centenary Commemoration was attended by a distinguished company of ladies and gentlemen (about 300) amongst whom were the American Ambassador, the Hon. J. W. Davis, Rt. Hon. Austen Chamberlain, Chancellor of the Exchequer, Sir Oliver Lodge, Sir David Brooks, Sir John Cadman, Sir Auckland Geddes, Vice-Admiral Sir G. G. Goodwin, Sir Gerald Muntz, the Lord Mayor of Birmingham, Sir H. Fowler, Sir Wm. Ashley, Prof. Ashworth, Prof. Turner, Prof. Eustice, Major Gibson Watt, Delegates from the Universities of Cambridge, Glasgow, Edinburgh, Ireland, Durham, London, Manchester, Liverpool, Birmingham, Leeds, Sheffield, Bristol, etc., The Royal Society of Edinburgh, Royal Institution of Great Britain, Society of Arts, Royal Cornwall Polytechnic Society, Institution of Mechanical Engineers, The Insti-



tution of Electric Engineers, Iron and Steel Institute, The Institute of Chemistry, The Institution of Mining Engineers, etc., etc.

*First Day, September 16th.*

The Commemoration was inaugurated at the Birmingham University, where the visitors were received by the Lord Mayor of Birmingham (Sir Wm. Brooks); he stated that he desired to extend a very hearty welcome to all present and especially those visitors who had come from a distance. He was proud to number amongst them direct descendants of James Watt and Matthew Boulton. He further explained that it was intended to endow a Professorship of Engineering at the Birmingham University to be known as the "James Watt Chair" for the purpose of engineering research. They wanted if possible to give opportunities to young scientific men to follow out the same line as that which was pursued with such great success by men like James Watt. They also desired to erect in the city of Birmingham a suitable building for the housing of the Watt, Boulton and Murdoch relics, and preserve the memorials of the work of these great men.

Professor F. W. Burstall then delivered a lecture on the "Rise of Engineering Manufacture."

Mr. William Mills presented to the Lord Mayor a bound illuminated address in eulogy of the work of James Watt presented by the Norwegian Government to the Centenary Committee.

This was followed by a lecture by Professor H. S. Hele-Shaw on "James Watt and Invention." The experience of the War, he said, showed to what an extent the very existence of a country depended upon inventions. Just as the most sinister results threatened us from the inventions of the enemy so this country was saved many times over by our own inventions, which were brought into being under the stimulus of patriotism.

In the afternoon a memorial service was held at the Parish Church, Handsworth. The Rev. E. W. Barnes, F.R.S., Canon of Westminster Abbey, gave a very impressive address on the life and work of James Watt, and deplored the use of his inventions for the purposes of war. After this address a laurel wreath was placed on the Watt statue, and the visitors left by special motors for Heathfield Hall, where they were received by Mr. George Tangye. A group photograph was taken of the party and tea was provided in the grounds.

Heathfield Hall was the residence for many years of Watt and he died here in 1819. His garret workshop still exists in the same condition as it was left by him and many of those present took the opportunity of inspecting it.

The days programme concluded by a reception given by the Lord Mayor and Lady Mayoress at the Council House to which most of the visitors attended.

*Second Day, September 17th.*

The proceedings began at 10.30 a.m. with a lecture by Sir Oliver Lodge at the University on "Sources of Energy." The Chairman, Mr. C. H. Wordingham, President of the Institution of Electrical Engineers, introduced the lecturer as one of those few scientific men whose name is equally familiar to the scientific and to the general public. The subject of his lecture was one of the most profound importance at all times but especially at a time when our supply of coal which was the chief source of energy was in danger of becoming exhausted, and we were forced to seek fresh sources of energy if any could be found cheap enough to make it pay to use them.

Sir Oliver in a lecture, which was a scientific treat, dealt throughout with radio-activity as a new source of energy of infinite possibilities. There was in nature a great force which at present was inaccessible; but he saw no reason why the progress of discovery should not make

it available. This was "atomic energy" due to the structure of the atom itself. The power obtained would be very compact and clean, but there might occasionally be some explosions due to the liberation of power more quickly than it was wanted. At present we were at the beginning of the utilisation of this power. He then proceeded to show that all atoms whether of radium or any other element consisted of a centre nucleus of positive electricity around which revolved in regular orbits a considerable number of electrons of negative electricity at great speed; in fact the construction of an atom was similar in principle to our Solar system.

The number of these orbits varied in each element and were proportionable to the atomic weight of the particular element. These orbits had been counted, measured and the ratio of the electrons to the central mass ascertained. From the results of this research it has been possible to show that there are 92 elements (some of which, however, have not yet been discovered) with hydrogen at one end and uranium at the other.

Some of the more complicated atoms were unstable and fired off their electrons, and with these we were familiar under the name of radio-activity. The energy of radium was a million times that of the combustion of hydrogen.

What really happened was that a certain proportion of the radium atoms became unstable and fired off its electrons each year, the particular atom being reduced from an atomic weight of 225 to 207 and becoming metallic lead. This action would continue for about 3,000 years. The electrons are fired off as projectiles called "Alpha rays" which are helium gas with an atomic weight of 4, the speed of these projectiles being so great as to enable them to travel 3,000 miles whilst a bullet travelled 300 yards. The number of atoms was so large that a milligramme, the 70th part of a grain, fired off 30,000,000 shots

per second. The energy of radium was such that during the using up of one grain, enough heat was given off to raise a ton of water from freezing to boiling point.

At present this energy was inaccessible. All forms of matter contained it, but most of them were stable. The radio-activity elements threw it off spontaneously. If you could find the stimulus required to convert these stable atoms into an unstable condition then would begin the utilisation of that source of energy, and if ultimately you were able to extract and utilise mechanically the whole of the energy in an ounce of matter you would obtain sufficient power to raise the German Navy and pile it on top of a Scottish mountain.

It was a good thing that an uncivilised nation such as we have had to live with during the past five years had not made the discovery. He hoped that the human race would not do so, until it had brains and morality enough to use it properly. If the wrong people discovered it and it got in the wrong hands the very planet would be unsafe. They saw sometimes a new star had appeared in the heavens, with an explosion of terrific violence, but whether caused by the fact that some inhabitant "up there" had made discovery or not he did not know.

Sir Oliver then proceeded to show that by the utilisation of a portion of this atomic energy, wireless telephony had been made possible; he showed by sketches how by use of this energy the reproduction of the sounds carried to the receiver were so magnified or amplified that articulation at a distance of 1,000 miles or even to America was perfectly satisfactory and the final amplifier spoke quite distinctly. A great deal more can also be done in this direction, even signals which could not otherwise be perceived such as were sometimes sent through an uninsulated cable might be perceived by that extraordinary power of

amplification which was the first solution of the utilisation of the atomic properties of matter.

This was followed by a lantern lecture by I. D. Cormack, Professor of Engineering in the Glasgow University, on the model of the Newcomen Pumping Engine repaired by James Watt; he said that he made his great inventions by reasonings founded upon the knowledge of the laws of nature which he had acquired during a long course of study and experiment and "There was nothing of chance in Watt's invention."

The afternoon was spent in visiting three of Watt's engines in the Birmingham area; one erected in 1776 at Ocker Hill on the pumping station of the Birmingham Canal; the second at Bordesley dated 1796 on the premises of the Warwick and Birmingham Canal Co.; and the third made in 1817 at Lawley Street pumping station.

In the evening the commemoration dinner at which about 350 guests attended was held at the Grand Hotel, the Lord Mayor presiding and speeches were delivered by Messrs. Austen Chamberlain, Sir Oliver Lodge, the American Ambassador and others, chiefly in appreciation of the work of Watt and his lieutenants Boulton and Murdoch.

### *Third Day, September 18th.*

In the morning the works of Messrs. W. and T. Avery, which were previously the works of Boulton and Watt, were visited where some of the machinery installed by the former owners that was still remaining, was inspected. This works was lighted by gas in 1802 by Murdoch.

A special meeting of the University of Birmingham was held at mid-day in the great hall of the Birmingham and Midland Institute for the purpose of conferring honorary degrees on some of the more distinguished visitors. This was presided over by the Vice-Chancellor Sir Gilbert

Barling, assisted by the Prov. Vice-Chancellor and the staff of the University.

The candidates were introduced by Sir Oliver Lodge, who gave a short summary of the scientific achievements of each.

The degree of Doctor of Laws was then conferred on the following Gentlemen :—

The American Ambassador, The Hon. J. W. Davis.

Professor Auguste C. E. Rataeu.

Colonel W. C. Blackett, President of the Institution of Mining Engineers.

Professor Archibald Barr, Glasgow University.

Admiral Sir George Goodwin, Engineer in Chief of the Fleet.

Sir George Thomas Beilby.

F. W. Lanchester.

The American Ambassador in a very able speech in which he mentioned the kindly feeling that has existed for the past century between the United States and England thanked the Vice-Chancellor for the great honour bestowed upon him, and the meeting concluded.

The whole of the Commemoration functions were well thought out and organised, and the proceedings were not only interesting but highly instructive. At the close it was decided to publish a verbatim report of the meeting at the cost of about a guinea, to be issued to the visitors only.

E. W. NEWTON.



## The British Association Meeting at Bournemouth.

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*Report of the Conference of Delegates of Corresponding  
Societies, by Wilson Ll. Fox.*

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At the British Association Meeting at Bournemouth from the 9th to 13th of September, the Conference of Delegates of Corresponding Societies held two meetings, at the first of which, on the 11th, their President, Brigadier-General Lord Montagu of Beaulieu, A.I.C.E., gave his Address on "Roads: Ancient and Modern." He traced the history of road development from the tracts of large wild animals through a second stage when pack animals, such as horses, mules, donkeys and oxen, were driven along the footpaths, logs or brushwood being used over swampy places, and trunks of fallen trees formed primitive bridges over streams. Then we come to a third stage, with stones or gravel placed upon the paths. Another stage was reached when wheels came into use. The Romans made roads along the ridges of hills that the troops might be on high ground. A revolution in road construction was brought about by the coaching era, which began about 150 years ago. This was followed in about 1850 by Telford and Macadam's plan of broken stones of suitable size, on adequate foundation, with a camber sufficient to drain off the water. He mentioned that the main cause of the wear and

tear came not so much from the wheels passing over the surface as from interattrition, i.e., the stones lying between the surface and the foundation are rubbed together, by which process their edges are ground away and dust and mud come up to the surface through the interstices of the stones. He contended that to the majority of road lovers and road users the placing of roads under the domination of a Ministry composed almost entirely of railway officials was a retrograde step. For many reasons road transport would in future be the cheapest and most convenient method of carrying passengers and goods. It was to be hoped that the new Ministry would rise above the pro-railway bias with which it was credited.

His address was followed by a discussion on "Atmospheric Pollution of Towns," introduced by Dr. J. S. Owens, M.D. (hon. sec. to the advisory committee on that subject). He dwelt on the ill effects which it produces on the health of the people, and stated that all transmissible diseases were conveyed by means of solid particles, and the importance of solid suspended matter in the atmosphere was probably vastly greater than that of gaseous impurities. He mentioned that the smoke from a single factory chimney about 20 miles to the west of London could be traced and recognized as far as 30 miles to the east of London or a distance of 50 miles from its source. The smoke from this chimney formed one of the most conspicuous landmarks in the South of England for flying machines. Allusion was also made to "Fuel Economy" and other work of the Committee which was formed in 1912 and had published four Annual Reports commencing in 1914. It is considered that the invention of a continuously running gauge for recording the amount of pollution in the atmosphere is a remarkable achievement.

On the second day of the Conference Mr. M. de Carle S. Salter (superintendent in charge of the work of the

‘British Rainfall Organization’) read a paper entitled, “The Exposure of Rain Gauges.” He referred to the large number of instances of want of harmony between records at neighbouring stations which have been specially investigated, the gauges in nearly every case proving to be defective, either in construction or exposure. This was the only paper read at the British Association Meeting referring especially to Meteorology with the exception of one by Sir Frederick Stupart (Director of the Canadian Meteorological Service) on “Some Unsolved Problems of Canadian weather.”

Mr. T. W. F. Parkinson, M.Sc., read a paper on “The Importance of including Geography in the Curriculum of Higher Education,” which was afterwards discussed and great stress was laid on the need for a more systematic and universal study of the subject, in order to deal more efficiently with the numerous intricate problems arising with regard to the British Empire from time to time and in other directions.

## Portrait Gallery.

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- I. LIEUT.-GENERAL SIR RICHARD HUSSEY VIVIAN, BART.,  
FIRST BARON VIVIAN, G.C.B. VICE-PRESIDENT, 1835 TO  
1837.

Some account of the descent of the first Lord Vivian from Ralph, younger brother of the John Vivian of Trevidren in Buryan, who in the early fifteenth century by his marriage with the heiress became the first Vivian or Vyvyan of Trelowarren, will be found in the biographical notice of Sir Arthur Pendarves Vivian in the 1916 *Report*, and there is a short account of the whole family in the biographical notice of Sir Richard Rawlinson Vyvyan in the 1913 *Report*. It is therefore not necessary to repeat it here.

Richard Hussey Vivian was the son of John Vivian of Truro, a vice-warden of the Stannaries, son of the Rev. Thomas Vivian of Comprigney, and thirteenth in descent from the above mentioned Ralph. His mother was Betsy, daughter and co-heir of Richard Cranch, vicar of St. Clements. He was born at Truro on 28th July, 1775. His Christian names were derived from his great uncle Richard Hussey of Okehampton, M.P. for Mitchell. He received his first education at Truro Grammar School under the well-known Dr. Cornelius Cardew. Thence he was removed to a preparatory school at Lostwithiel, from which he went to Harrow. He matriculated at Exeter College, Oxford, but was there for only two terms. In

1791 he was sent to France to learn the language, and in 1793 he was articled to Jonathan Elford, a solicitor of Devonport, but almost immediately, in July of the same year, he obtained an ensign's commission in the 20th Foot. He does not appear to have joined his regiment, and on 20th October he was promoted to a lieutenancy in an independent company, and in the same month exchanged into the 54th Foot. His promotion was rapid. He became Captain in the 28th Foot, 7th May, 1794, Major in the 7th Light Dragoons, 9th March, 1800, and Lieut.-Colonel of the 25th Light Dragoons, 20th September, 1804, but exchanged back into the 7th in December.

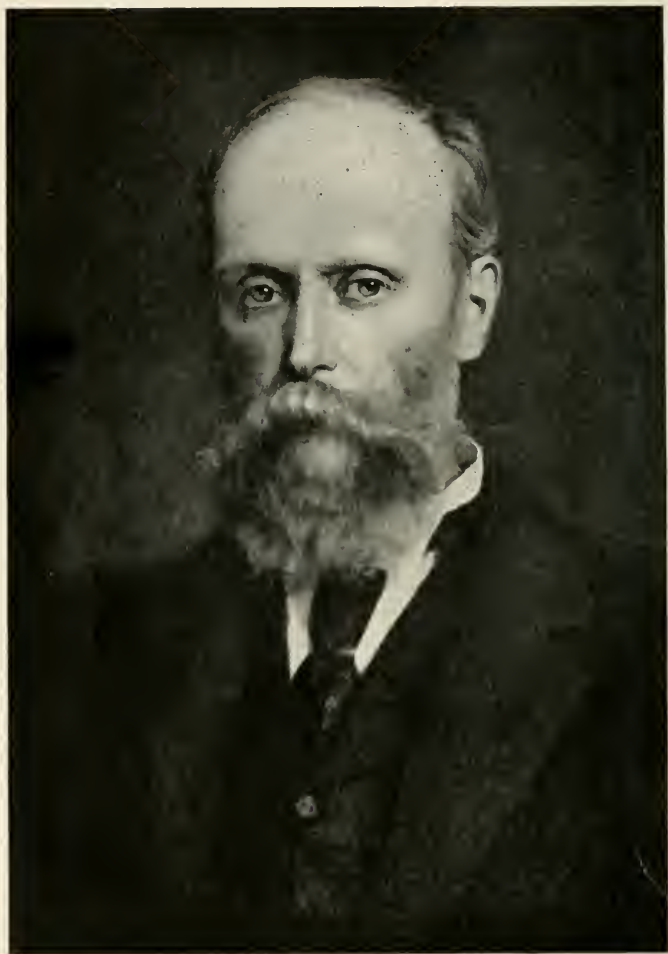
From 1794 to the peace which followed Waterloo his war services were very great. In 1794 he was with the Duke of York's army in Flanders, a by no means successful campaign, and fought at Nimuegen on the 28th October. He was at Thiel with General Dundas in December, and under Lord Cathcart at Geldermalsen in January, 1795. In August, 1799, he went with the expedition of the Duke of York and Sir Ralph Abercromby to Helder, where the Dutch fleet was captured. He was at the defeat at Bergen on the 19th September and at the rather useless victory of the Duke of York over General Brune at the same place on the 2nd October, and he was with the Duke of York in his disastrous defeat before Alkmaar on the 6th of the month, which ended the expedition. In October, 1808, he went to Corunna in command of the 7th Light Dragoons and joined the army of Sir David Baird. On the 5th December with the cavalry under Lord Paget he left Astorga and joined Sir John Moore at Toro on the 10th. During the celebrated retreat to Corunna he did excellent service and after the final battle on the 16th January, 1810, he sailed for England with what was left of the Army under Sir David Baird on the 17th. For his services at Sabagun and Benavente in that campaign he received a gold medal.

From 1810 to 1813 he was mostly with his regiment in Ireland, but he was made a full colonel 20th February, 1812, and aide-de-camp to the Prince Regent, and shortly afterwards he was appointed equerry to the Prince. In August, 1813 he joined the Duke of Wellington's army in Spain and with it entered France in October. He was in the actions of the Nivelle, St. Pierre and the Gave de Pau and at the Passage of the Nive, and did especially good service at the important victory of Orthez on 27th February, 1814, where however, he was so severely wounded that he had to return to England. In January, 1815, he was made a K.C.B. and in April of that year went to Belgium in command of a cavalry brigade consisting of the 7th, 10th and 18th Light Dragoons. In May he was stationed at Ninove and on the night of the 15th June he was present at the Duchess of Richmond's ball at Brussels. His Brigade arrived at Quatre Bras on the 16th too late to be of much use, but at Waterloo on the 18th he distinguished himself so much and showed such remarkable personal valour that he received the thanks of both Houses of Parliament, was made a Knight of Hanover and had the Austrian Order of Maria Theresa and the Russian Order of St. Vladimir conferred on him. During the occupation of France he was in Picardy and returned to England with the Army in 1818. In 1819 he was sent to Newcastle-on-Tyne and thence to Glasgow on account of riots and disturbances in those places.

In 1820 Sir Richard Hussey Vivian was elected M.P. for Truro, having already unsuccessfully contested the seat in 1818, and represented that borough until 1825. From 1826 to 1831 he was M.P. for Windsor, and from 1837 to 1841 for East Cornwall. From 1825 to 1830 he was Inspector General of Cavalry, and received the rank of Lieutenant General on the 22nd June, 1827. In 1831 he was appointed Commander of the Forces in Ireland







THOMAS CHARLES AGAR ROBARTES,  
6TH VISCOUNT CLIFDEN, 6TH BARON MENDIP AND 2ND BARON ROBARTES.  
PRESIDENT OF THE ROYAL CORNWALL POLYTECHNIC SOCIETY, 1886 TO 1888.

and in 1835 was offered the post of Secretary of State for War, but declined it and was appointed Master General of Ordnance and a Privy Councillor. In 1828 he was created a Baronet, and from 1830 to 1837, that is to say during the whole reign, he was Groom of the Bedchamber to King William IV., on his retirement from which post he received the Grand Cross of the Bath. In 1841 he received a Peerage. He died at Baden-Baden, on the 20th August, 1842, and was buried in St. Mary's Church, Truro.

Richard Hussey Vivian was twice married, first in 1804 to Eliza, daughter of Philip Champion de Crespigny, of Aldeburgh, Suffolk, who died in 1831, by whom he had two sons and three daughters, and secondly to Letitia, third daughter of the Rev. James Agnew Webster, of Ashford, co. Longford, by whom he had one daughter.

II. THOMAS CHARLES AGAR ROBARTES, 6TH VISCOUNT CLIFDEN, 6TH BARON MENDIP AND 2ND BARON ROBARTES. VICE-PRESIDENT, 1883 TO 1885; PRESIDENT, 1886 TO 1888.

The family of Agar descends from Charles Agar who went to Ireland from Yorkshire, married a daughter of Peter Blancheville of Kilkenny, settled at Gowran, co. Kilkenny, and died in 1696. His grandson Henry was M.P. for Gowran, and married in 1733 Anne, daughter of Welbore Ellis, Bishop of Meath. Welbore Ellis, son of the Bishop, had a distinguished official career, and was created Baron Mendip in 1794, with remainder to the three elder sons of his sister Anne Agar. James Agar, son of Henry, was created Baron Clifden in 1776 and Viscount in 1781, both in the peerage of Ireland. He died in 1789. He had three sons, of whom the eldest was Henry Welbore Agar, who succeeded as second Viscount Clifden, and on the death of his great-uncle, Welbore Ellis, inherited the title of Baron

Mendip, and took the additional surname of Ellis, together with the rather peculiar crest of that family, the heraldic description of which sounds a little contradictory, though its origin was probably only in the use of a Greek gem as a seal by some early member of the family. The second son, John Ellis Agar, died childless in 1797, and the third, Charles Bagenal, married Anna Maria, daughter and co-heir of Thomas Hunt of Mollington Hall, Cheshire, and sole heir of her great-uncle Henry Robarts, third Earl of Radnor. The family of Robarts originated in Truro, where they acquired considerable wealth in commerce. Sir Richard Roberts or Robarts was created Baron Truro by James I., it is said through the influence of the Duke of Buckingham. He bought the manor of Lanhydrock in 1620 from Lyttleton Trenance, who had inherited it through the Lyttletons from the Glynns. His son John built the beautiful house which was so nearly destroyed by fire in 1881, and planted the fine avenues. This John took the Parliament side in the Civil War and garrisoned his house against the King. But he seems to have altered his views later, for he was received into favour by Charles II. and became successively Lord Privy Seal, Lord Lieutenant of Ireland and President of the Council. In July, 1679, he was created Viscount Bodmin and Earl of Falmouth, but a few days later exchanged the latter title for that of Earl of Radnor. His grandson, Charles Bodville Robarts, succeeded him as second Earl, but died without issue. The third Earl, Henry, was a nephew of the second, and was succeeded by his cousin John, son of Francis Robarts, youngest son of the first Earl. At his death in 1764 the peerages became extinct and the property reverted to George Hunt, whose father, Thomas Hunt, the elder, of Mottington, had married a sister of the third Earl. George Hunt never married and he was succeeded by his niece, the above-mentioned Anna Maria, daughter of his brother, Thomas Hunt, the

younger, of Mottington, and wife of Charles Baganal Agar, third son of the first Viscount Clifden. Her son Thomas James Agar succeeded to the estates, took the name of Robartes and in 1869 was created Baron Robartes. He married Juliana daughter of the Right Hon. Reginald Pole Carew of Anthony and died in 1882. From 1847 to 1868 he was M.P. for East Cornwall. He was a Vice-President of the Royal Cornwall Polytechnic Society from 1871 to 1873. His only son, Thomas Charles Agar Robartes, is the subject of this memoir.

The third Viscount Clifden was Henry Agar-Ellis, son of the second Viscount. He died in 1866 and was succeeded by his eldest son Henry George, who died unmarried in 1895. The fifth Viscount was his uncle, Leopold George Frederick, second son of the second Viscount. He died without male issue in 1899, when the male line of Henry Welbore Agar-Ellis, second Viscount Clifden and second Baron Mendip, became extinct, and the titles reverted to the grandson of his younger brother Charles Baganal, Thomas Charles Agar Robartes, who had succeeded his father as second Baron Robartes in 1882. He is Viscount Clifden in the peerage of Ireland, Baron Mendip in that of Great Britain and Baron Robartes in that of the United Kingdom. He is also Baron Gowran of Gowran in Kilkenny in the peerage of Ireland.

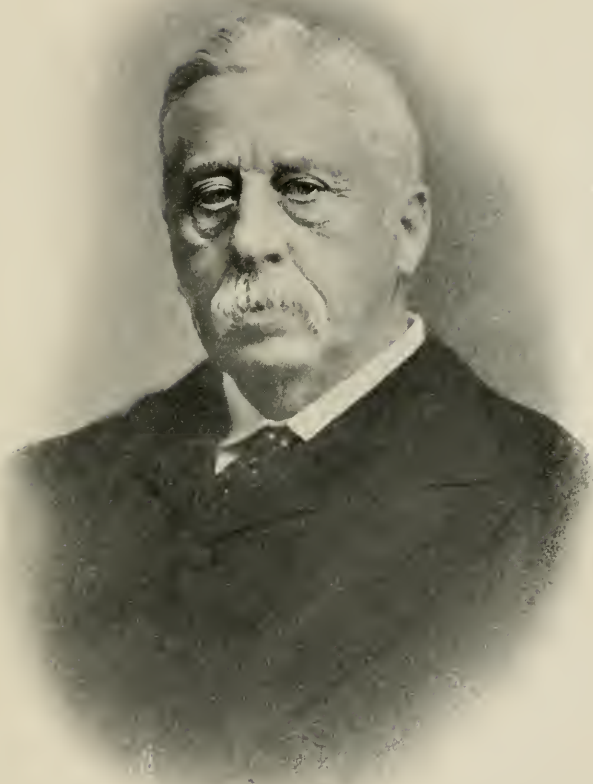
Lord Clifden was born in London on January 1st, 1844. He was educated at Christ Church, Oxford, where he took his B.A. degree in 1867 and his M.A. in 1869. He was called to the Bar at the Middle Temple in 1870. In 1880 he was elected M.P. for East Cornwall as a Liberal, his coadjutor (also, to the surprise of all who knew him, a Liberal) being that great Cornish antiquary, William Copeland Borlase. He only held the seat until 1882, when he succeeded to the peerage. In 1878 he married Mary, daughter of the late Francis Henry Dickinson, of King-

weston, Somerset, a well known ecclesiologist and liturgical scholar of a past generation. They had five sons and four daughters. The eldest son, the Hon. Thomas Charles Reginald Agar-Robartes, M.P. for the St. Austell Division of Cornwall, met with a glorious death in the early part of the war. Lord Clifden or rather Lord Robartes, as he then was, was elected a Vice-President of the Royal Cornwall Polytechnic Society in 1883 and President in 1886. He does not appear to have contributed any papers to the Report, though he took the chair at three annual meetings of 1887, 1888 and 1889, and gave short descriptive opening addresses at the Exhibitions of 1886, 1887 and 1888. But he and his father before him have always taken a great interest in the work of the Society, and he contributed largely to the fund for carrying out the research into the method of saving a larger percentage of tin and tungsten in Cornish mines, which had been set going at the Summer Meeting of the Society in 1915.

III. SIR JOSEPH WHITWELL PEASE, BART., M.P. VICE-PRESIDENT, 1883 TO 1885 ; PRESIDENT, 1892 TO 1894.

A few years ago that very eminent member of the Society of Friends, the late Dr. Thomas Hodgkin, talking on the subject of pedigrees, told the present writer that few, if any, of the Quaker families, except the old Scottish house of Barclay of Ury, whose origin could not be hidden, could trace back to a period before they joined the Society. Many, his own among the number, could go back to the time of George Fox, but no further, and it seemed as if there was a purpose in it, and that they wanted to cover up their tracks and ignore all family history before their conversion. This seems to have been the case with the family of Pease of Darlington in the county of Durham. Modern researches have discovered a John Pease of Essex, whose younger son Edward held land at Sikehouse in Fishlake, in the





SIR JOSEPH WHITWELL PEASE, BART., M.P.

PRESIDENT OF THE ROYAL CORNWALL POLYTECHNIC SOCIETY, 1892 TO 1894.



West Riding of Yorkshire, in the time of Henry VIII. But there is nothing to show what relation, if any, he was to the first certain ancestor of the present family, Joseph Pease of Shafton, who was born in 1665 and died in 1719. His second son, Edward Pease, settled in Darlington. In a copy of Keith Johnston's "Dictionary of Geography" of 1850, which the writer happens to have, it is stated that the population of the town of Darlington was 11,033, "a large number of whom are Friends," and it was evidently a great Quaker centre. Edward Pease was born in 1711 and died in 1785. His great-grandson, Joseph Pease, of Southend, Darlington, was, as M.P. for South Durham, 1832 to 1841, the first Quaker to enter Parliament. If one may trust Mr. Barney Maguire's narrative, as recorded by that eminent minor-canon of St. Paul's, the Rev. Richard Harris Barham, better known as "Thomas Ingoldsby," he was present in Westminster Abbey at the coronation of Queen Victoria :—

"Then Mithur Spaker, with Mithur Pays the Quaker,  
All in the gallery you might persave."

Joseph Pease was born in 1799, and died in 1872. In 1826 he married Emma, youngest daughter and co-heir of Joseph Gurney, of Norwich, a member of another well known Quaker family. His eldest son was Joseph Whitwell Pease.

Joseph Whitwell Pease was born at Darlington on the 23rd of June, 1828. He was educated at the Friends' School at York under John Ford. At the age of 17, in 1845, he entered the Pease Bank at Darlington. Later he engaged also in woollen manufacture, collieries and the iron trade. He was chairman of the North-Eastern Railway Company in 1894. He was greatly interested in farming and wrote a valuable paper on the meat supply of Great Britain for the South Durham and North Yorkshire Chamber of Agriculture. He made a considerable

mark in Parliament, representing South Durham from 1865 to 1885 and the Barnard Castle division of Durham from 1885 to 1903. In politics he was a Gladstonian Liberal, and his principles included Home Rule for Ireland, but his chief useful services were on matters relating to trade and finance, on which he was eminently qualified to speak with authority. He also took part in movements more or less suggested by his religious tenets, for in 1881 he moved the second reading of a bill to abolish capital punishment, and he was at one time President of the Peace Society and of the Society for the Suppression of the Opium Traffic. He was created a Baronet in 1882. In 1854 he married Mary, daughter of Alfred Fox, of Falmouth, by whom he had two sons and six daughters. The two sons have both distinguished themselves in various lines. The elder, Alfred Edward, the present baronet, represented York from 1885 to 1892 and the Cleveland Division of Yorkshire from 1897 to 1902. He is a considerable sportsman and has explored many regions, chiefly in Africa, in search of big game. The younger, the Right Hon. Joseph Alfred Pease, now Lord Gainford, was continuously in Parliament for various constituencies from 1892 to 1917, during which time he has held various offices, including those of Chancellor of the Duchy of Lancaster, Minister of Education and Postmaster-General. He also is a great athlete and sportsman, cricketer, football and polo player and hunter. Sir Joseph Whitwell Pease died of heart failure at Kerris Vean, Falmouth, on the 23rd of June, 1903.

Sir Joseph's connection with the Royal Cornwall Polytechnic Society probably came about through his marriage into a family which has done more than any other for the Society. As President he contributed two addresses to the Annual Report, one on "The Development of Railway and Steam Communication" and the other on "The Post Office and Telegraph Service." These

were both subjects on which he was well qualified to speak.

No account of the Pease family would be complete without mention of its very remarkable coat of arms, crest and motto. Whoever may be responsible for their invention or whatever may be their date, they are probably the most elaborate and ingenious instance of what is known as "canting" (that is to say punning) heraldry in existence. The shield is too crowded, no doubt, but that is an almost inevitable fault in recent coats, the simpler charges having been all used up long ago. In heraldic language they read :

Arms. *Per fess*, azure and gules (which by the way, seems to be false heraldry, unless the principal charge which follows counts as separating colour from colour), a fess nebuly ermine between two lambs passant in chief argent, and in base upon a mount proper a dove rising argent, holding in its beak a pea-stalk, blossom and pods proper.

Crest : Upon the capital of an Ionic column a dove rising, holding in its beak a pea-stalk, etc., as in the arms.

Motto : *Pax et Spes.*

The ingenious way in which *peas*, *peace* and its emblems, and even the Latin for *hope*, evidently as a sound-play, *S-pes*, are brought in, is delightful, and, though the division of the field "*per fess*" (horizontally) into blue and red seems unnecessary, even if not contrary to rule, it is impossible to be sure that there is not some symbolism in it, and in all the other bearings also. If the arms were granted to Sir Joseph when he was made a baronet, as is highly probable, for Quakers of the old school would not be likely to use arms, however much they were hereditarily entitled to them, and he would have to have them then, who shall say that the lambs, besides their usual meaning of innocence and *peace*, may not also refer to the meat supply of Great Britain on which he wrote ?





REPORT  
OF THE  
Observatory Committee  
OF THE  
Royal Cornwall Polytechnic Society  
WITH  
METEOROLOGICAL TABLES  
AND  
Sea Temperature Table,  
FOR THE YEAR 1919,  
BY  
WILSON LLOYD FOX, F.R. Met. Soc.  
*(Hon. Sec. Observatory Committee),*  
AND  
JOSHUA BATH PHILLIPS, F.R. Met. Soc.,  
*Of the Meteorological Office Weather Station, Falmouth.*

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FALMOUTH:  
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1920.



REPORT  
OF THE  
OBSERVATORY COMMITTEE  
OF THE  
ROYAL CORNWALL POLYTECHNIC  
SOCIETY  
FOR THE YEAR 1919.

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COMMITTEE :—

H. DYKE ACLAND,  
F.G.S., F.S.A.

HOWARD FOX, F.G.S.

Major LUARD, R.E.

Capt. ARTHUR ROGERS,  
R.N.R., J.P.

WALTER ROGERS, B.A.

WILSON LLOYD FOX, F.R. Met. Soc., J.P., *Hon. Sec.*

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The Observatory and garden have been maintained in good order. The outside painting of the buildings, done under the direction of the Meteorological Office, was completed in February.

The annual grant of £30 has been received from the Meteorological Office, together with the sum of £49 19s. 3d. in discharge of the balance due to your Committee for the

expenses of the Observatory and premises to the 30th June, 1919.

The dwelling-house portion was occupied by Mr. R. E. Watson, B.Sc. (2nd Lieut., late R.G.A.) up to 28th February, and subsequently by Mr. B. Francis (Assistant at Kew Observatory), during August, and by Miss L. Doris Sawyer, B.A. (Assistant in the Forecast Division of the Meteorological Office), in September, while members of the staff were absent on annual leave. On the 8th December, Mr. W. J. Fowler returned, after having served in the Meteorological Section, R.E., since December, 1917.

The following is an extract from the 14th Annual Report of the Meteorological Committee for the year ending 31st March, 1919, referring to the work of the Falmouth Observatory.

“Telegraphic reports have been sent regularly to the Meteorological Office at 1h., 7h., 13h. and 18h. The 18h. Observation has been usually made by Mr. R. H. Brenton, the Falmouth Corporation observer. The self-recording instruments have been kept in continuous operation throughout the year. Pilot balloon soundings of the upper air were made by Mr. Watson during November and December, 1918, and January and February, 1919. Analysis and tabulation of the records from the anemometers at Plymouth, Pendennis Castle and Scilly have been made weekly.”

After the signing of the Armistice on the 11th November, 1918, the Government restrictions upon the circulation of meteorological information were removed and subsequently the Meteorological Office reports to the daily press were renewed. The public have welcomed the re-appearance of the meteorological forecasts and charts which are again regularly exhibited at the Custom House. The exhibition of meteorological data at the Municipal Buildings has been commenced, and daily, weekly and monthly statistics are again published in the local daily and weekly papers.

Your Committee congratulate the Society on the formation of the "Rainfall Association of Cornwall" under its auspices, and which owes its inception to the suggestion of Mr. A. Pearse Jenkin on whom as Honorary Secretary has fallen the work of organization.

Sea Temperatures have been continuously taken on board the tug "Durgan" by Captain George White near the centre of the harbour. These have been tabulated by the Honorary Secretary and will appear in the annual report together with the usual meteorological tables, prepared by Mr. J. B. Phillips, through the courtesy of the Meteorological Office, and notes by the Hon. Sec.

WILSON LLOYD FOX,  
*Hon. Sec.*

# METEOROLOGICAL NOTES, 1919.

**PRESSURE.**—The mean for the year was 1015·3 millibars (29·979 mercury inches) being 0·2 mb. (·006 in.) above the average of the 45 years, 1871-1915. There was nothing abnormal either in the maximum 1040·8 mb. (30·734 ins.) which occurred on 17th March, nor in the minimum, 960·8 mb. (28·374 ins.) on 24th January.

**TEMPERATURE.**—The mean for the year was 50°·2, being 0°·5 below the average of the 45 years 1871-1915 ; that of April was 46°·4 which is the lowest since 1882 with three exceptions, the lowest of which was 43°·8 in 1917; the mean of July 59°·6, of September 57°·3 and of October 49°·7 were low, whilst that for November, 41°·9 is a record. On 12th November the minimum registered was 26°. This was the minimum for the year and has only once been exceeded in the month of November, viz. : in 1890, when it was 22°·3. The maximum for the year was 78°·1 on the 2nd of August. In the neighbourhood of London between August 8th and 18th on ten successive days the mercury in the shade rose above 80° and twice touched 88°. At Falmouth there has been no maximum of 80° or over since August, 1916, when it reached 80°·2. These data should serve to belie the impression which is sometimes expressed, that the south coast of Cornwall is hot in the summer.

The following table illustrates the marked differences of the minimum temperatures between the Midlands and at Kew Observatory and at Falmouth, during the cold spell of seven days from 7th to 13th February, 1919, taken from the Daily Weather Report of the Meteorological Office.

	7	8	9	10	11	12	13
Nottingham ... ..	22°	15°	16°	17°	24°	16°	18°
Benson (Oxon.) .. ..	20°	18°	19°	21°	17°	15°	16°
South Farnborough .	18°	16°	15°	22°	17°	17°	17°
London (Kew Observatory) ... ..	22°	21°	21°	24°	24°	21°	23°
Falmouth ... ..	37°	36°	35°	36°	38°	42°	42°



**RAINFALL.**—The total 1144·1 mm. (45·07 ins.) was 18·2 mm. (0·72 in.) above the mean of the 45 years, 1871-1915. The greatest amount in one day 31·5 mm. (1·24 ins.) occurred on 28th August. During the first six months 646·7 mm. (25·48 ins.) and during the last six months 497·4 mm. (19·59 ins.) fell, which is a reversal of the ordinary procedure, when the first half of the year usually has the larger amount. The heavy rainfalls of January 185·5 mm. (7·31 ins.), of February, 156·7 mm. (6·18 ins.), of March 152·5 mm. (6·01 ins.), of December 194·5 mm. (7·66 ins.) and of April and August slightly above the mean, prevented the year from being a specially dry one, as the following small monthly falls of rain will show : May, 49·8 mm. (1·94 ins.), June, 24·6 mm. (0·97 in.), July, 21·6 mm. (0·85 in.), September, 46·5 mm. (1·88 ins.), October, 41·0 mm. (1·62 ins.), and November, 95·2 mm. (3·75 ins.) make a total for these six months of 278·2 mm. (10·96 ins.) or slightly over half the average. The June fall was the lowest since 1882 with the exception of those in 1886, 23·1 mm. (0·91 in.) ; 1887, 1·3 mm. (0·05 in.), and 1889, 20·6 mm. (0·81 in.). The 41 mm. (1·62 ins.) of October is a record, the nearest approach being 46·6 mm. (1·83 ins.) in 1896. There was an absolute drought between May 23rd, and June 8th inclusive, a period of 17 days without any rain. A partial drought was experienced between May 22nd and June 19th inclusive, viz.: 20 days with only 5·1 mm. (·2 in.). Referring to Table IV., the monthly totals of the hourly values of rainfall, it will be noticed that the hours when most rain fell in 1919 were 4 a.m. with 70·7 mm. (3·03 ins.) and 3 a.m. with 59·7 mm. (2·35 ins.). Then follow 5 a.m. with 56·7 mm. (2·24 ins.) and 2 p.m. with 56 mm. (2·21 ins.) The hours of least fall were 7 a.m., 25·8 mm. (1·01 ins.) ; 8 a.m., 29·7 mm. (1·17 ins.) ; 5 p.m., 35·8 mm. (1·41 ins.) and 6 p.m., 37·9 mm. (1·5 ins.) The number of rainy days amounted to 209, which is two above the average. December had 30 which was equalled in 1886. January, February, March, May, September and December were above the average, and the other six months below.

**BRIGHT SUNSHINE.**—The number of hours was 1754·6 which is less than the mean of the 35 years, 1881-1915, by 9·7 hours. This gives a daily average of 4·8 hours. July

was the sunniest month with 245 hours or a daily mean of 7·9 hours. December was the least sunny, having only 53·7 hours. October had 158·9 hours. This is a record for that month: the nearest approach being in 1892 with 150·5 hours. In October, 1886, there were as few as 81·3 hours, giving an extreme range for that month of 69·2 hours. The greatest amount in one day was 14·9 in June. The total number of days on which bright sunshine occurred was 307, being two above the average. August registered 31 and July 30. The least number of days was 18, in February, as against the minimum number in that month of 13, in 1903. August had the highest percentage of possible duration, viz., 51, and February and December the least with 21.

Quoting from the Monthly Weather Report of the Meteorological Office for October, it may be mentioned that in the Southern and Western Sections of the British Isles the mean daily amount of sunshine was above the normal during every week from the beginning of June to the end of October.

**WIND.**--The relative proportion from the four Cardinal points shows an unusual prevalence of Northerly winds followed by Westerly, Southerly and Easterly. The means are as follows:--N. 10·3 as against the average of the 45 years 1871-1915 of 7·2; W. 10·0 as against 10·3; S. 5·6 as against 7·9 and E. 4·7 as against 5·1. The means of the W. and S. for these 45 years added together make 18·2, just half as much again as the N. and E. which make 12·3; whereas in 1919 the sum of the means of the N. and W. make 20·3, whilst of the S. and E. only about half, viz: 10·3. In this district it may be asserted that the unusual predominance of the Northerly type of wind largely accounts for the long periods of dry weather which have previously been alluded to. The highest average hourly velocity of 26 metres per second (58·2 miles per hour) occurred in the evening of the 6th of January during a S.S.E. gale. The gusts of over 30 m/s (69·4 m/h) were registered by the Dines Anemometer at Pendennis Castle as follows:--33 m/s (73·8 m/h) in the early morning of 2nd December, during a gale from S.S.W.; 34 m/s (76·1 m/h) on the afternoon of 14th April, during a gale from W.N.W. and 35 m/s (78·3 m/h) in the evening of

6th January, during a gale from S.S.E. The wind after this last gale suddenly dropped in one hour to 11·2 m/s (25 m/h). It is a curious coincidence that the highest average hourly velocity of 26 m/s (58·2 m/h) and the maximum gust of 35 m/s (78·2 m/h) are the same as in 1918.

### MISCELLANEOUS.

Harvest operations commenced in some districts as early as July and were in full swing in this neighbourhood after 12th August, owing to the long spell of fine weather which was also the cause of no corn being laid.

A violent hailstorm was experienced at Falmouth at about 11.20 on Christmas morning. Information from the Observatory is as follows:—"Loud peals of thunder, evidently directly overhead, at 11.20; small hail at 11.23, succeeded by moderate and heavy hail at intervals of about a minute with duration of about two minutes each shower. Hail about  $\frac{3}{8}$  in. diameter. The wind was W. by N. with a velocity of 28 m/h. There was no variation in wind direction, nor in the pressure record. The temperature suddenly dropped from 47°·0 F. to 44°·5, recovering itself within half an hour. The hail was round and the surface rough with small sharp points."

At two semi-detached houses in Bar Terrace, Falmouth, 24 panes of glass were broken. Other houses, besides green-houses and garden frames suffered to a greater or less extent. The force of the hailstones was such that in some cases they made clean cut round holes through the glass, as though bullets might have penetrated it. The noise on the roof and windows of All Saints' Church was such as to drown, for the time being, the singing of the full choir and playing of the organ. The storm, which was accompanied by one or two flashes of lightning and peals of thunder, lasted from eight to ten minutes, and the hail-stones lay on the ground in drifts to the depth of many inches after it passed over. At Budock House, W. by N. of Falmouth, about two miles distant, some 45 panes of glass were broken and the hail-stones were said to be as large as full-sized marbles, rough, with sharp points. It was from three to four hours before they all melted.

From Penryn, situate towards the N.W., at a distance of from two to three miles, it was reported that the storm was terrific in its intensity, the hail-stones being larger than the oldest inhabitant ever saw. The town was left white and the roads became difficult to walk on.

In the annual report of the Society for the year 1886, is a long and detailed account by the Rev. Canon Philpotts of an even more severe hail-storm, which occurred on the morning of the 31st March, 1886, at Porthgidden, situate on the West shore of Falmouth Harbour and distant North of the Town about six miles as the crow flies. He traces the course of the storm from the Scilly Islands to Lewes, mentioning a number of places it passed over in a direct line at an average rate of about 70 miles an hour. In most of the cases to which he refers "lumps of ice of irregular shapes," others "oblong in form," were reported. He also states that "he had to replace upwards of 6,000 feet of glass in the gardens besides 170 panes in the dwelling house. Some idea may be formed of the force of the hail from the fact that the impressions were left in the ground for several days, and in some flower beds hundreds of marks remained, which being measured six weeks afterwards proved to be one inch in diameter and half an-inch in depth, perfectly round and smooth, like holes in a 'Solitaire' board."

## FALMOUTH SEA TEMPERATURES.

The Observations have been taken by Captain George White, of the tug "Durgan," near the centre of the Harbour during 1919.—They have been compared with the mean and extreme values of the readings of maximum and minimum thermometers for the same days of each month at Falmouth Observatory. These thermometers are divided on the stem and verified and placed in a Stevenson Screen, at a height of four feet over grass.

1919.	Number of Daily Observations.	Means.	Difference from Air.	Maximum.	Difference from Air.	Minimum.	Difference from Air.	Monthly Range.	Difference from Air.	Means for 36 years, 1872 to 1885 and 1894 to 1915
		°	°	°	°	°	°	°	°	°
January	27	48·3	+6·7	50·0	- 2·2	45·0	+16·0	5·0	-18·2	48·1
February	24	45·3	+3·0	47·0	- 5·0	43·0	+14·9	4·0	-19·9	47·1
March ..	27	47·3	+4·3	50·0	- 5·2	45·0	+13·0	5·0	-18·2	47·4
April ....	27	49·7	+3·2	52·0	-11·8	48·0	+16·8	4·0	-18·6	48·9
May ....	27	54·9	+0·7	57·0	- 8·9	52·0	+ 8·7	5·0	-17·6	52·1
June ....	25	58·5	+1·1	61·0	- 7·3	56·5	+11·6	4·5	-18·9	55·6
July ....	27	59·7	0·0	61·0	-13·6	56·0	+ 9·0	5·0	-22·0	58·3
August ..	26	62·3	-0·5	63·5	-14·6	60·0	+13·6	3·5	-28·2	59·7
September	26	60·4	+2·8	62·0	-11·0	57·5	+18·3	4·5	-29·3	59·0
October ..	27	55·4	+5·9	57·5	- 6·4	53·0	+20·0	4·5	-26·4	56·9
November	25	50·5	+8·7	53·0	- 4·0	48·5	+22·5	4·5	-27·5	53·4
December	27	49·2	+2·8	50·0	- 3·6	48·0	+13·0	2·0	-16·6	50·2
Means ..	26	53·5	+3·2	55·3	- 7·8	51·0	+13·8	4·3	-21·8	53·1



TABLE I.

## METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Mean and Extreme Pressure of the Air, Mean Amount of Cloud at 7 a.m., 1 p.m. and 6 p.m., and Number of Hours of Bright Sunshine at Falmouth Observatory during 1919.

DATE.	PRESSURE OF AIR.						CLOUD, 0-10.			BRIGHT SUNSHINE.					
	Mean pressure of the Air, in millibars	Absolute Maximum, in millibars	Date of Maximum	Absolute Minimum, in millibars	Date of Minimum	Extreme Monthly Range, in millibars.	Mean elastic force of Vapour, in millibars.	7 a.m.	1 p.m.	6 p.m.	Number of days on which Bright Sunshine occurred.	Percentage of Possible Duration.	Mean number of hours of Bright Sunshine for 35 years, 1881-1916.	Mean number of days on which Bright Sunshine occurred in 35 years, 1881-1916.	1919.
January..	1008.4	1037.9	24	980.8	6	77.1	8.1	6.6	7.4	7.0	67.8	7.3	21	26	20
February ..	1006.1	1034.4	9	977.1	17	57.3	8.2	7.7	8.1	7.2	59.8	8.5	18	21	21
March ..	1010.9	†1040.8	17	994.1	23	46.7	8.0	7.4	7.1	6.6	135.3	10.8	26	37	26
April ..	1018.1	1039.1	21	978.5	15	59.6	8.8	6.4	7.1	5.7	178.3	11.9	28	44	27
May ..	1017.2	1029.0	24	1005.1	2	23.9	12.2	7.4	6.9	5.4	184.1	13.4	26	39	29
June ..	1023.2	1034.5	10	1008.5	30	26.0	12.9	6.1	6.5	5.3	229.6	14.9	28	47	28
July ..	1019.6	1027.8	13	1005.1	1	22.7	13.8	6.5	5.4	4.5	245.0	14.6	30	50	29
August ..	1018.0	1027.2	11	989.2	28	38.0	15.9	5.7	5.9	4.5	226.6	14.0	31	51	30
September ..	1017.0	1030.6	17	995.5	23	35.1	13.9	7.7	6.3	5.8	143.8	11.6	25	38	27
October ..	1022.8	1035.6	17	996.9	1	36.7	10.2	5.2	6.4	4.6	158.9	9.9	29	48	26
November ..	1010.3	1030.7	16	996.1	26	34.6	8.0	5.7	7.4	6.2	71.1	7.6	24	26	22
December ..	1012.1	1034.0	19	985.7	31	48.2	9.8	7.5	7.4	7.3	53.7	6.8	21	21	20
Totals or Means ..	*1015.3							6.7	6.8	5.8	1754.6		307	37	305

The readings of the Barometer are in millibars (1 mercury inch = 33.8632 millibars), and have been reduced to 32° F. at mean sea level and latitude 45°, and corrected for index error and capillarity. The extreme Maxima and Minima of barometric pressure are from the Dines Float Barograph, and have been standardised. The records of bright sunshine are from the Campbell-Stokes Sunshine Recorder. The results are published by permission of the Meteorological Office, London. \* 29.979 mercury inches. † 30.734 mercury inches. ‡ 28.374 mercury inches.



TABLE II.

## METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

## Table of Mean and Extreme TEMPERATURE OF THE AIR and of HYGROMETRIC CONDITION at Falmouth Observatory for 1919.

DATE.	TEMPERATURE OF AIR.										HYGROMETRIC CONDITION.										
	Mean of daily Maximum and Minimum.		Mean for 45 years 1871-1915.	Mean of daily Maxima.	Mean of daily Minima.	Absolute Maximum.	Date of Maximum.	Absolute Minimum.	Date of Minimum.	Dry Bulb.	Depression of Wet.			Humidity. Complete Saturation = 100.			Means for Diurnal Range.				
	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.		7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.					
1919.																					
January ..	41·6	43·5	46·3	36·9	52·2	52·2	14	29·0	31	40·7	45·0	42·0	○	1·4	2·4	1·5	88·5	82·9	88·1	86·5	87·0
February..	42·2	43·4	46·1	38·2	53·0	53·0	5, 6, 20	28·1	1	40·9	44·5	42·9	1·3	5·2	1·7	87·4	82·5	85·9	85·3	86·2	
March ..	42·8	44·0	48·6	36·9	55·2	55·2	2	32·0	27	40·8	46·8	44·2	1·4	3·7	2·7	88·3	75·4	80·3	81·3	82·7	
April ..	46·4	47·5	52·9	39·9	63·8	63·8	19	31·2	3	43·9	50·9	47·8	1·6	4·6	3·3	87·6	71·6	77·7	79·0	81·4	
May ..	54·1	52·1	59·5	48·6	65·9	65·9	31	43·3	6	52·6	57·6	55·3	1·7	3·6	2·9	88·4	78·6	82·2	83·1	86·6	
June ..	57·2	57·2	63·3	51·0	68·3	68·3	28	44·9	22	56·0	61·0	59·3	3·0	4·9	4·1	81·3	72·7	76·1	76·7	80·4	
July ..	59·6	60·2	66·3	52·3	74·6	74·6	27	47·0	31	57·3	64·3	61·4	2·1	6·1	4·6	87·1	67·9	74·2	76·4	80·3	
August..	62·8	60·0	69·6	56·0	78·1	78·1	2	46·4	30	60·0	67·1	64·9	1·5	5·7	4·6	91·0	70·9	75·7	79·2	82·3	
September ..	57·3	56·9	63·8	51·3	73·0	73·0	11	39·2	29	54·4	61·7	53·0	1·0	4·5	2·9	92·8	75·2	82·2	83·4	85·3	
October ..	49·7	51·7	56·2	43·1	63·9	63·9	6	33·0	29	46·8	54·7	49·9	1·7	4·6	2·5	87·5	72·4	83·2	81·1	83·2	
November ..	41·9	47·4	47·5	36·2	57·0	57·0	22	26·0	12	40·1	46·1	43·5	1·4	3·3	1·8	88·6	76·9	86·0	83·8	84·5	
December ..	46·4	45·0	50·8	42·0	53·6	53·6	4, 20	35·0	9	46·1	48·8	47·2	1·4	2·3	1·5	89·8	84·6	89·1	87·8	88·4	
Means..	50·2	50·7	55·9	44·2						48·3	51·0	51·3	1·6	4·0	2·8	88·2	76·0	81·7	82·0	84·0	

The data are from Thermometers divided on the stem and verified and placed in a Stevenson Screen at a height of 4 feet over grass. The corrections for diurnal range of humidity are obtained from the 24 hour records of the photographic thermograph for 35 years 1886-1910. The results are published by permission of the Meteorological Office, London.

TABLE III.

## METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

RELATIVE MONTHLY NUMBER OF DAYS OF WIND from the Four Cardinal Points of the Compass; Mean and Extreme VELOCITY OF WIND in metres per second, and Monthly and Yearly RAINFALL at FALMOUTH OBSERVATORY for 1919.

DATE.	WIND.										RAIN.									
	Relative proportion of				Highest average hourly velocity.		Direction of Maximum velocity.		Day and hour of Maximum velocity.		Maximum gust.		Day, hour and minute of maximum gust.		Rate.	Mean for 45 years. 1871-1915.	Greatest amount in one day.	Date.	No of rain days.	Mean No. of rain days for 45 years. 1871-1915.
	N	E	S	W	Metres per second.	Miles per hour.	d.	h.	Metres per second.	Miles per hour.	d.	h.	m.	mm.						
January ..	8	4	7	12	26	58	S S E	6 23	35	78	6 21 55	185.5	23.9	14	24	20				
February ..	6	11	8	3	24	56	E	10 15	31	69	10 15 5	156.7	28.2	16	19	17				
March ..	13	4	5	9	21	47	S W	7 11	27	60	7 11 25	152.5	22.6	5	24	18				
April ..	13	3	3	11	23	52	W N W	15 1	34	76	14 13 50	78.1	14.8	28	14	16				
May ..	5	11	8	7	18	40	—	2 2	24	54	1 15 20	49.3	12.1	21	14	13				
June ..	12	2	4	12	19	43	W S W	12 9	28	63	12 9 5	24.6	13.5	20	11	14				
July ..	14	4	3	10	13	29	W	22 13	20	45	22 10 0	21.6	9.1	1	7	16				
August ..	11	2	5	13	17	38	W	19 9	23	52	26 15 35	98.6	31.5	28	14	16				
September..	9	6	7	8	15	34	S S W	4 11	21	47	20 13 35	46.5	12.2	4	17	16				
October ..	15	5	6	5	14	31	N	24 23	20	45	29 13 5	41.0	8.9	24	17	20				
November ..	14	4	2	10	22	49	—	3 20	30	67	20 5 50	95.2	21.5	9	18	19				
December ..	4	0	8	19	22	49	S S W	2 5	33	74	2 5 29	194.5	23.6	28	30	22				
Totals ..	124	56	66	119								*1144.1	†1162.3		209	207				

The velocity of the wind is from the three Pressure Tube Anemometer at Pendennis Castle and is the average for 30 minutes before to 30 minutes after the hour. The direction of the wind is from the Robinson Anemometer at Falmouth Observatory. The Rainfall, measured in millimetres, (1 in. = 25.4 mm.), is from the 11 inch self-recording Beckley Gauge, 2 feet above ground; the number of Rain Days are those on which 0.25 mm. (0.01 in.) or more, of rain was recorded; the values given are from midnight to midnight. The results are published by permission of the Meteorological Office, London.

\* 45.07 inches. † 45.78 inches. ‡ 1.24 inches.

TABLE IV.  
METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Monthly totals of the HOURLY VALUES OF RAINFALL, from the continuous records of the Beckley Rain Gauge at Falmouth Observatory for 1919.

	1919.																								Totals.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
January..	4.4	2.6	3.4	6.9	4.0	4.7	3.5	6.7	6.0	6.4	13.6	10.5	10.2	12.4	14.7	12.6	5.8	7.3	7.8	15.6	6.7	9.8	3.3	6.8	185.5	
February	6.5	5.5	9.2	7.8	7.1	5.4	4.2	4.8	8.8	9.7	6.1	6.2	6.9	6.1	5.8	5.8	8.5	7.8	3.9	4.6	5.8	8.9	7.0	4.3	156.7	
March	7.1	8.9	7.0	7.3	7.2	4.7	4.6	6.1	6.6	10.0	11.5	12.2	3.5	0.8	2.5	3.9	0.9	1.6	4.3	5.3	9.4	6.5	8.6	12.1	152.5	
April	9.1	6.1	5.8	4.3	2.9	2.2	1.7	3.1	3.7	7.0	1.5	2.1	3.7	3.1	4.9	0.8	1.0	1.4	1.4	0.3	1.9	1.0	3.4	5.7	78.1	
May	1.6	2.5	5.6	3.0	0.9	0.6	0.1	0.2	1.4	2.6	0.6	1.6	1.6	1.1	1.6	3.3	2.9	3.7	3.0	3.1	0.4	3.2	3.5	1.1	49.3	
June	1.0	0.6	1.5	3.8	2.9	3.2	2.1	0.6	0.4	1.6	1.1	0.6	0.2	1.6	—	0.7	0.3	0.4	0.2	0.2	0.2	0.2	0.2	1.0	24.6	
July	0.6	0.1	0.6	1.2	3.4	2.0	0.9	0.6	0.1	—	—	—	—	—	0.4	0.5	0.9	0.1	0.6	0.2	—	0.7	3.1	3.6	1.9	21.6
August	1.4	7.0	10.6	18.5	11.1	8.2	2.8	0.6	0.2	2.3	1.6	0.3	3.3	2.1	1.7	12.0	4.7	1.2	1.1	0.8	0.4	2.0	3.6	1.1	98.6	
September	0.7	2.5	4.2	2.8	4.9	1.9	3.5	1.6	0.6	—	2.7	4.2	4.4	9.2	—	—	0.2	—	0.2	0.2	0.7	0.6	1.2	0.2	46.5	
October	4.7	1.3	1.1	1.6	1.3	1.0	0.3	1.0	0.9	0.8	0.3	1.9	2.5	1.9	1.8	1.7	0.5	1.2	2.9	3.3	2.7	1.4	1.4	3.5	41.0	
November	4.2	5.5	7.5	6.0	4.0	3.7	1.1	1.5	5.5	2.3	1.1	0.3	0.9	0.3	0.5	2.8	4.8	5.0	5.8	7.8	8.1	7.1	5.9	3.5	95.2	
December	3.2	3.6	3.2	7.5	7.0	4.5	1.2	2.7	6.7	9.9	11.1	10.6	15.8	17.0	15.4	7.8	6.2	7.8	9.2	7.0	7.2	5.3	12.1	12.3	194.5	
Total mm.	44.5	46.4	59.7	70.7	56.7	42.1	25.8	29.7	40.5	52.6	51.2	50.5	53.0	56.0	49.4	32.3	35.8	37.9	40.1	48.2	44.3	49.1	53.8	53.5	1144.1	
Total inches..	1.75	1.83	2.35	2.78	2.22	1.66	1.02	1.02	1.61	2.07	2.02	1.99	2.09	2.20	1.96	2.06	1.41	1.49	1.58	1.74	1.93	2.12	2.11	45.07		

The rain is measured in millimetres (1 in. = 25.4 mm.) and the hourly falls are the amounts registered as having fallen from half an hour before to half an hour after each hour. The results are published by permission of the Meteorological Office, London.

TABLE V.  
METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE, 5° 5' W. Height, 167 feet above mean sea level.  
Monthly Totals of HOURLY VALUES of BRIGHT SUNSHINE at Falmouth Observatory during 1919.

1919.	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Totals.
January..	..	..	..	..	0.4	7.4	10.3	11.1	11.0	10.6	8.8	7.4	0.8	..	..	..	..	67.8
February ..	..	..	..	0.5	2.9	6.5	7.0	8.6	7.9	6.3	6.4	7.3	5.8	0.6	..	..	..	59.8
March ..	..	..	0.3	6.1	10.9	13.4	15.3	15.0	14.2	16.5	15.6	12.9	9.2	5.4	0.5	..	..	135.3
April ..	..	..	4.0	12.6	14.4	15.2	16.3	16.3	15.9	15.0	16.3	18.6	17.9	11.1	5.2	0.1	..	173.9
May ..	..	..	1.1	8.2	13.6	13.8	15.4	13.5	14.3	15.8	17.1	16.7	17.7	14.3	8.6	2.0	..	184.1
June ..	..	..	7.3	15.1	15.5	14.9	15.1	15.9	16.1	16.8	17.6	17.4	19.3	17.4	14.1	11.2	0.4	229.6
July ..	..	..	4.3	11.5	13.4	14.6	16.2	18.7	20.3	21.7	21.0	19.8	19.3	17.9	16.6	9.8	..	245.0
August..	..	..	0.4	9.3	14.3	17.0	19.5	18.5	17.6	18.0	18.3	19.1	18.1	18.0	16.0	4.6	..	226.6
September ..	..	..	..	0.6	6.7	10.6	11.1	14.2	16.5	16.0	14.9	15.0	15.0	9.7	2.4	..	..	148.8
October ..	..	..	..	..	3.6	14.7	17.3	18.6	17.6	17.6	17.0	18.0	13.7	3.8	..	..	..	158.9
November ..	..	..	..	..	..	2.0	7.3	9.2	11.5	10.6	8.3	7.0	3.2	..	..	..	..	71.1
December ..	..	..	..	..	..	..	3.4	7.8	10.4	9.5	8.5	4.4	0.8	..	..	..	..	53.7
Totals ..	..	13.1	43.0	84.7	116.6	146.0	163.3	178.4	171.8	173.8	169.8	163.6	140.8	98.2	63.4	27.7	0.4	1751.6

The records of Bright Sunshine are from the Campbell-Stokes Sunshine Recorder. The instrument in use is the property of the Meteorological Office, London, by whose permission the results are published.



THE EIGHTY-EIGHTH  
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Phillips, Joshua Bath, The Observatory, Falmouth.  
Prisk, H., 15, Tregenver Road, Falmouth.  
\*Rashleigh, Evelyn W., Lawhyre Lodge, Fowey.  
Richards, Miss E., 8, Tehidy Terrace, Falmouth.  
\*Roberts, Capt. William, Vella Vista, Perranporth.  
Roberts, Capt. James, Perranporth.  
Rodd, Francis R., Trebartha Hall, Launceston.  
\*Rogers, Commander Arthur, R.N.R., The Crossways, Falmouth.  
Rogers, Mrs. Arthur, The Crossways, Falmouth.  
Rogers, John, Esmond, Falmouth.  
Rogers, Mrs. J., Esmond, Falmouth.  
Rogers, Mrs. R. B., Hexworthy, Launceston.  
Rogers, Mrs. Wilfred, Tremedden, Falmouth.  
\*Rose, Sir Thomas Kirke, D.Sc., Royal Mint, London, E.1.  
Rowe, J. Hambley, M.B., 88, Horton Grange Road, Bradford.  
Rows, R. G., The Willows, Helston.  
Rowse, Miss M. J., Carworger, St. Columb.  
Schiff, Edmund, Sea View Terrace, St. Ives.  
\*Sharpe, W. W. J., 17, Florence Terrace, Falmouth.  
Sharpe, Mrs. W. W. J., 17, Florence Terrace, Falmouth.  
Shilson, D. H., Trewiddle, St. Austell.  
Skinner, E. P., St. Clements, Truro.  
Skinner, Mrs. E. P., St. Clements, Truro.  
Skinner, Miss, St. Clements, Truro.  
Stephens, Capt. Wm. J., R.A.M.C., M.R.C.S., Hayne, Newquay  
Stephens, Miss E. M., Ashfield, Falmouth.  
Stephens, Miss S. M., Ashfield, Falmouth.  
\*Stephens, J. Gilbert, The Cottage, Ashfield, Falmouth.  
Stephens, Mrs. J. G., The Cottage, Ashfield, Falmouth.  
\*Stephens, F. J., F.G.S., Reskadinnick, Camborne.  
\*Stocker, Henry, Broughmead, St. Austell.  
Taylor, M. T., East Pool Mine, Carn Brea.  
\*Thomas, R. Arthur, Polstrong, Camborne.  
Thomas, F. W., 9, Wesbourne Road, Birkdale, Southport.  
Thomas, C. V., Basset Road, Camborne.  
Thurston, Edgar, 15, Cumberland Road, Kew, Surrey.  
Thyne, Mrs. A. C., Penstowe, Bude.  
Tilly, Alfred, Warleggan, Bodmin.  
Tolson, Rev. R. T. S., Perranzabuloe Vicarage, Callestick.  
Tonkin, Mrs., Penwarne, Falmouth.

Treffry, C. E., Place, Fowey.

Trefusis, The Lady Mary, Trefusis, Falmouth.

\*Trefusis, Lieut.-Col. the Hon. H. W. F., Trefusis, Falmouth.

\*Trestrail, Nicholas, A.M.I.C., Clarendon Road, Redruth.

Trythall, Frank, Atlantic Terrace, Camborne.

Tuckett, Mrs. R. E., Glendurgan, near Falmouth.

Vallentin, Rupert, F.L.S., The Nook, Lemon Street, Truro.

Vallentin, Mrs. R., The Nook, Lemon Street, Truro.

Vine, E. G., 114, Treloar Warren Street, Camborne.

Ward, W. W., 6, Princes Buildings, Clifton.

Wethered, F. J., M.D., F.R.C.P., Pencaer, Melville Road, Falmouth.

Wethered, Mrs. F. J., Pencaer, Melville Road, Falmouth.

Whitburn, Miss Maud M., Restormel House, Falmouth.

Wickett, Tom, 11, Trewirgie Road, Redruth.

Wilkinson, John W., Rothesay, The Crescent, Belmont, Surrey.

Williams, S. B., Roskear, Camborne.

Williamson, Rev. Canon M. B., The Rectory, Falmouth.

Williamson, Mrs., The Rectory, Falmouth.

Worth, R. K., Lemon Street, Truro.

### LIFE MEMBERS.

Frederic W. Fox, 39, Bank Street, Ashford, Kent.

Thorpe, Sir T. E., C.B., Ph.D., F.R.S., Whinfield, Salcombe, Devon.

\*Edward Kitto, F.R.Met.Soc., Pennance, Preston, Paignton.

H. S. Hill, M.J.I., 29, Staddon Terrace, North Road, Plymouth.

### HONORARY MEMBERS.

Sir R. T. Glazebrook, C.B., D.Sc., F.R.S., Bushy House, Teddington, Middlesex.

Sir William Napier Shaw, M.A., Sc.D., F.R.S., 10, Moreton Gardens, S.W.

Sir Hugh Shakespear Barnes, K.C.S.I., K.C.V.O., 7, Cheyne Place, Chelsea, London, S.W.

Charles Chree, D.Sc., LL.D., F.R.S., Kew Observatory, Richmond, Surrey.

Sir Archibald Geikie, O.M., K.C.B., LL.D., D.Sc., F.R.S., Shepherds Down, Haslemere, Surrey.

Hugh Robert Mill, D.Sc., 62, Camden Square, London, N.W.

The Lord Rayleigh, O.M., D.Sc., LL.D., F.R.S., Tereline Place, Witham, Essex.



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- Sir W. H. M. Christie, K.C.B., D.Sc., F.R.S., The Tower House,  
Down, Kent.
- Professor H. H. Turner, M.A., D.Sc., F.R.S., University  
Observatory, Oxford.
- Principal E. H. Griffiths, M.A., D.Sc., F.R.S., University  
College, Cardiff.
- Professor William Gowland, F.R.S., F.S.A., A.R.S.M., F.I.C.,  
13, Russell Road, Kensington, London W.
- John Scott Haldane, M.A., M.D., F.R.S., Lecturer on Physiology  
in the University of Oxford.
- Sir Oliver Lodge, D.Sc., LL.D., F.R.S., Principal of Birming-  
ham University.
- Sir Thomas Holland, K.C.I.E., D.Sc., F.R.S., F.G.S., Director of  
the Geological Laboratory at the University of Manchester
- Sir Henry Alexander Miers, M.A., D.Sc., F.R.S., F.G.S.,  
Cromwell Range, Fallowfield, Manchester.
- W. J. Sollas, M.A., Sc.D., F.R.S., F.G.S., Professor of Geology  
in the University of Oxford.
- Dr. Louis A. Bauer, Director of the Department of Terrestrial  
Magnetism, Carnegie Institute, Washington, U.S.A.
- Sir Joseph Larmor, M.A., D.Sc., F.R.S., M.P., St. John's College,  
Cambridge.
- Robert Simpson Woodward, Ph.D., LL.D., Sc.D., President of  
the Carnegie Institute, Washington, U.S.A.
- \*Wilson Lloyd Fox, F.R.Met.Soc., Carmino, Falmouth.
- \*Jenner, Henry, M.A., F.S.A., Bospowes, Hayle.
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*NOTE.—The Secretary will be obliged if the members will inform him of  
any errors or necessary alterations in these lists.*



## Members who have joined the Society since this Report has gone to Press.

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- Allchin, Thos., Westcott, Falmouth.  
Cardell, Mrs. J., 9, Gyllyngvase Terrace, Falmouth.  
Clazey, Lt.-Col. J. Oswald, Lamorva, Falmouth.  
Dwight, F. B., Boslowick, Falmouth.  
Dwight, Mrs., Boslowick, Falmouth.  
Evans, D. Glynn, Mount Pleasant Road, Camborne.  
Farebrother, G. H., Roskrow, Penryn.  
Graham, Walter H., Red House, Tywardreath.  
Gill, Major Arthur W., "Trevint," Truro.  
Hodgkin, Mrs. T. A., Treworgan, Falmouth.  
Hichens, Comdr. Hugh C., R.N., Woodlane House, Falmouth.  
Jenkin, Capt. C. J., R.E., M.I.C.E., M.I.M.M., L.S.A., 5, Princess  
Square, Plymouth.  
Moreing, Capt. A. H., M.P., 62, London Wall, London.  
Newcombe, Mrs. D. G., 13, The Strand, Falmouth.  
Neale, Howard, Porthgwidden, Devoran.  
Otter, W. H., Alfred House, Falmouth.  
Pethybridge, George H., Royal College of Science, Dublin.  
Polglase, Mrs. F. C., The Square, Penryn.  
Rodger, John L., B.Sc., Woodside, Western Terrace, Falmouth.  
Rodger, Mrs. J. L., Woodside, Western Terrace, Falmouth.  
Symons, W. Bartle, 31, Moor Street, Camborne.  
Thomas, W. C., Albion Hotel, Falmouth.  
Thomas, Mrs., Albion Hotel, Falmouth.  
Trail, D. G., Darjeeling, Woodlane, Falmouth.  
Trail, Mrs. D. G., Darjeeling, Woodlane, Falmouth.  
Trusted, Miss Alice N., Chy-an-Givel, Perranwell.  
Wedmore, Miss, White Mill End, Sevenoaks.

## Annual General Meeting, 1921.

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**T**HE eighty-eighth Annual General Meeting of the Royal Cornwall Polytechnic Society was held in the Library of the Polytechnic Hall, Falmouth, on Tuesday, February 15th, 1921, the President (Mr. Henry Jenner) occupying the chair. He was supported by a large attendance of Members, among whom were Mr. and Mrs. F. J. Bowles, Mr. and Mrs. W. L. Fox, Canon J. S. Burns, Mr. and Mrs. W. W. J. Sharpe, the Rev. Enys H. Enys, Comdr. A. Rogers, R.N.R., P.J., Col. the Hon. H. W. F. Trefusis, Messrs. J. Chellew, J.P., J. B. Phillips, H. D. Acland, W. Rogers, F. B. Rogers, Mr. and Mrs. G. L. Anderton, Mrs. Jenner, Miss E. M. Stephens, Mrs. John Rogers, Mrs. G. H. Fox, Messrs. J. Wickett (Redruth), F. G. Dexter, H. B. Carlyon, J. Pearse Jenkin, J.P. (Redruth), Mr. and Mrs. E. P. Kestin, Councillor and Mrs. C. L. Fox (Mayor and Mayoress of Falmouth), Major W. D. Luard, Mr. C. Phillips, Miss Phillips, Mr. R. Morton Nance, with the secretary (Mr. E. W. Newton), assistant secretary (Mr. E. J. Moseley), and librarian (Mr. H. Barnicoat).

The President read apologies for absence from Sir John Trelawny, Lord St. Levan, Messrs. John Badger, F. G. Stephens and Capt. J. P. Rogers.

The Secretary read the minutes of the last Annual Meeting, which on the proposition of the President were duly confirmed.

The Annual Report of the Council for 1920 was presented and read by the Secretary.

Col. the Hon. H. W. F. Trefusis proposed the adoption of the Report. He congratulated the Society on having again started its full activities after the war.

Mr. T. F. G. Dexter seconding, said that he mentioned at the last Annual Meeting that a Society such as theirs ought not to hoard up money, and he now felt exceedingly pleased at the manner the money had been expended during the year. Theirs was a very live Society and they did all they could to interest their members. He felt confident that during the coming year their membership would increase and that when the next Annual Meeting came around they would be able to show a balance on the right side again. He thought the Report most satisfactory and congratulated the Officers and members upon it.—The Report was adopted.

Mr. Wilson L. Fox, Hon. Secretary of the Observatory, presented and read the Report of the Observatory Committee for 1920. This will appear later in this Report.

Mr. A. Pearse Jenkin read the Report of the Cornwall Rainfall Association. This also will appear later in the Report.

Mr. W. W. J. Sharpe proposed the adoption of both Reports. He considered that Mr. Fox and Mr. Jenkin were to be congratulated upon the work they were doing.

Mr. H. B. Carlyon, seconding, said that anyone reading between the lines would realize what a tremendous amount of the work had been involved in compiling these Reports.

The President, supporting, said that he considered that the work was extremely interesting in spite of the large amount of figures presented.—Both Reports were adopted.

The Secretary proposed the election of the following new members:—Lady Mary Trefusis, Mrs. M. E. Holman, Mrs. C. Thynne, Mrs. R. H. Green, Mrs. W. R. Pidgeon, Mrs. Skinner, Miss Skinner, Miss Green, Miss W. J. Hoblyn, Miss L. F. M. Hoblyn, Sir John W. F. Trelawny, Lt.-Col. Harold Kinsman, Messrs. Moffatt Lindner, H. E. Bramble, O.

Champion, J. W. Wilkinson, Richard H. Green, W. Randell Pidgeon, C. Williams, M.P., E. P. Skinner, Edmund Schiff, W. Brown, E. H. Davison, H. Orme Fox, F. Trythall, and Miss Whitburn.

Mr. R. Morton Nance seconded and they were unanimously elected.

Major Cuthbert L. Fox proposed the following members as Vice-Presidents: The Lord Bishop of Truro, Mr. John Chelley, and Capt. G. F. Thomas-Peter. He considered their names would be an adornment to the present list of Vice-Presidents, and they would add lustre to the Society. He also proposed that Mr. Walter Rogers be added to the Executive Committee. That gentleman would undoubtedly be a great asset to the Committee, he being active and keen.

Mr. E. P. Kestin submitted the balance sheet, which recorded a balance due to the Treasurer of £168 17s., he hoped that during the next few months that this would be wiped out.

It was resolved, on the motion of Mr. W. W. J. Sharpe, seconded by Commander A. Rogers, that the accounts be adopted.—Commander Rogers remarked that he thought it very satisfactory that they were so little in debt seeing that they had now bought the remainder of the premises, besides carrying out a successful Exhibition.

Mr. H. D. Acland asked whether it was worth while in these days when they were being asked to be as economical as possible, to spend such a large sum on printing, stationery, and printing the Annual Report? He should like to have seen on the balance sheet the loss they had incurred through holding the Exhibition at Camborne. And again he would ask, was the holding of the Exhibition worth while? He was of the opinion that it was not. He did not think that the results were at all commensurate with the cost it was to the Society. He considered that an Exhibition of this kind should be paid for by the County Council. He also strongly

objected to the Hall being used as a cinema, he noticed that the receipts from the letting of the Hall for this purpose were £300 odd, but was it worth while? He was of the opinion it was not. Personally he considered the Hall should be used for lectures of an educational character illustrated by means of the cinema. He should very much like the Society to offer the Hall to the County Council for educational lectures, illustrated by a cinema.

Mr. James Wickett, said he did not think the object of the Society was to make money out of the Hall, and his contention was, that the Exhibition at Camborne was a really good one. He was not frightened at losing a little money. He saw from the first that the Exhibition would not pay, and the Committee also realised it, but what was the loss of a hundred or two pounds if the objects of the Society were achieved? There might be some truth about the use of the Hall as a cinema, but the people on the spot were the best judges, and the revenue during the war time no doubt was found advantageous to the Society. Cornish people would find all the money required from an educational standpoint.

The Secretary, replying to Mr. Acland, said the reason why the cost of printing was so much was due to the fact that the Society had, through no fault of their own, to pay for two Annual Reports in one year, printing to-day was about three times as much, and labour and material over four times its pre-war prices. He considered that the letting of the Hall as a cinema was a wise and sound decision of the Committee. They were not by themselves in letting the Hall for this purpose, as the London Polytechnic Society had done the same thing. Many of the pictures shown at the cinema were most instructive. He also was of the opinion that they did the right thing in holding an Exhibition, and they had justified their existence. They had done what they had professed to do, something towards assisting the industries of the county, which was required at this time of depression

and aftermath of the war. It was better that the Society should spend its money in this manner than die of inanition.

The President considered the Exhibition was a most excellent one. This was what the Society existed for, and it was not unusual to have a loss over their Exhibitions. There had been only one which was a financial success, the one held at Camborne in 1908. He believed the pre-war average loss on each Exhibition was £100, so that the loss of £200 last year was exactly what might be expected under post-war conditions.

Mr. F. J. Bowles proposed a hearty vote of thanks to the Observatory Committee, to the Hon. Secretary (Mr. W. L. Fox), and to Mr. Pearse Jenkin, for his report of the Rainfall Association. He thought that the work of the Observatory was one of the features of the Society, the records going back as far as its institution in 1833. Mr. Fox was the mainspring and motive power that made the wheels of the Observatory go around.

Rev. Enys H. Enys, in seconding, expressed the hope that Mr. Fox would continue his excellent work for many years. The vote was carried unanimously.

Mr. J. Chelley proposed a cordial vote of thanks to Sir Edward Nicholl for his liberality in giving the funds for providing special prizes. He knew full well what Sir Edward had done and was doing for education in the County. Mr. E. P. Kestin seconded, and the President, in supporting, said that the prizes offered by Sir Edward would produce a great effect in the future. The vote was carried with acclamation.

Mr. Walter Rogers proposed a hearty vote of thanks to the Finance Committee, the Hon. Treasurer, the Judges, those who read papers and others who helped to make the Exhibition a success. This was seconded by Major Luard and carried.

A vote of thanks to the Chairman, proposed by Mr. Elkington and seconded by Mr. Acland, carried by acclamation, concluded the business.



## Report of the Council for 1920.

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**Y**OUR Council has pleasure in reporting that during the past year your Society has been able to carry out its full programme of work, which was so seriously interrupted by the War.

With the view of assisting the reconstruction of the industries of the country it was thought advisable to organise a Polytechnic Exhibition as in pre-war days. After careful consideration it was resolved to hold this at Camborne, this decision being largely influenced by the courteous letters received from the Urban District Council and the Camborne Chamber of Commerce, who promised their assistance and support.

Accordingly your 74th Exhibition was opened at the Public Rooms, Camborne, from Tuesday, September 14th until the 18th September.

This year the special feature of the Exhibition was exhibits illustrating the past and present mineral resources of Cornwall.

The Camborne Mining School contributed a collection of very interesting and valuable minerals illustrating practically all the mineral varieties that have been found in the County. This was admirably arranged by Mr. H. R. Beringer, teacher of mineralogy at the Mining School. Many of these specimens were from mines that have been closed during former depressions in mining, and showed the rich and high percentage of mineral in their lodes at comparatively shallow depths.

Mr. C. Bennetts, the foreman miner at King Edward Mine, exhibited a collection of minerals which was commendable as showing a keen interest in the subject, which might with advantage be emulated by other miners.

Dolcoath, South Crofty, East Pool and the Lady Gwendoline Mines sent exhibits of the various mineral ores now being raised, which were particularly interesting, as they called attention to the mineral potentialities of the district.

The specimens from the Rogers' lode at East Pool proved the valuable nature of this comparatively recently discovered lode in new country, while the series from South Crofty pointed to the highly complex nature of the lodes, and those from the Lady Gwendoline Mines were probably as high in tin percentages as anything previously worked in the County.

The Royal Institution of Cornwall exhibited a collection of prehistoric tin ingots and mining tools which were of considerable interest and pointed out the antiquity of Cornish tin mining.

It will be remembered that at your last annual meeting Commander Sir Edward Nicholl, R.N.R., M.P., offered an annual sum of £25, to be applied to special prizes for Students, and your thanks are due to this gentleman for his generosity, which enabled your Council to apply this amount to special classes for Students in the Technical Schools and Apprentices and Workmen, with the result that a large number of praiseworthy exhibits were received and recognised by the awards of substantial cash prizes. He has now placed at the disposal of the Society the sum of £500 War Stock, the interest of which will perpetuate these special prizes.

Owing to the restricted space in the building the Mechanical Section was not so large and comprehensive as in previous Exhibitions, but the high quality of the Exhibits was well maintained, and the Scientific Instruments were considered to be a fine display.

Special mention must also be made of the exhibits from the Technical Classes under the Education Committee of the County Council. These comprised the largest number of exhibits ever received in this department, and the Judges considered that they showed a marked advance in the quality of the work as compared with those sent on former occasions. Your Council was very gratified and pleased that the County Council is still identified with your Society in the promotion and encouragement of the Fine and Industrial Arts.

A new feature this year was the Home Craft and Cookery exhibits, received from the Camborne and Redruth Schools Domestic Science Centres, the Laundry work, and also the preservation of fruits being considered worthy of special mention, and it was regretted that no prizes were available in this Section.

The Exhibition was opened by your President (Mr. Henry Jenner, M.A., F.S.A.), who gave a very interesting address on "The Renaissance of Merry England." He was supported by a number of the leading members of the Society. This address will appear in the Annual Report.

In the afternoon an interesting paper was read by Mr. F. J. Stephens, F.G.S., on "The Early History of Camborne," the chair was taken by the Rev. J. S. Carah, Vicar of Penponds, and the paper gave rise to an interesting discussion.

On Thursday, 16th September, the Cornish Institute of Mining Engineers held their Annual Meeting in the large Hall of the Exhibition, when a valuable paper was read by their President (Mr. E. H. Davison, F.G.S.), on the Veinstones of Cornwall, illustrated by lantern slides and a collection of specimens which were on exhibition. The meeting was well attended and a very instructive discussion took place afterwards.

Your thanks are due to Mr. Cecil Thomas, who organised two very successful Concerts during the Exhibition, which were enjoyed by all who were present.

Your Council is pleased to report that they have acquired by purchase from the Committee of the Falmouth Hospital, their property in the Polytechnic premises, with the gratifying result that now the whole of the Polytechnic Building is the property of your Society.

The meeting of the Corresponding Societies of the British Association was held at Cardiff 23rd.-28th. of August, and your thanks are due to Mr. Wilson L. Fox, who again acted as your delegate. He reports that the Conference was an exceptionally interesting one. The President of the Conference (Mr. Thomas Sheppard, M.S., F.G.S.), gave an address on the "Evolution of Topographical and Geological Maps," of which there was an extensive collection in illustration of his subject. The Vice-President (Mr. T. W. Sowerbutts), introduced a discussion on the "Status of Local Societies," which was well maintained, special stress being laid on the financial difficulties caused by the war, the means of developing their objects, of getting new members, and of publishing papers. With the help of the Cardiff Naturalist Society an Exhibition was held illustrating the work which local Societies were carrying on. In appreciation of these the following is an extract from a letter of Professors J. L. Myres and H. H. Turner (Secretaries of the British Association), which appeared in "Nature" of the 28th October, 1920:—

"We rely on the Delegates from our numerous Corresponding Societies to keep these Societies informed of the Association's work, to bring on their younger members to our meetings, and to assist the local secretaries in extending the area round the place of meeting from which a full attendance of scientific workers may be expected. The fulfilment of one of our primary functions to bring provincial scientific workers into touch with Specialists gathered from afar must depend very much upon the Corresponding Societies of the neighbourhood."

On 25th August a Paper on "Railways and their

Obligations to the Community," by A. H. Garstang, Secretary of the Railway Facilities Sub-Committee of Section F. (Economic Science), was read.

The report of the Observatory Committee, together with the usual Meteorological Tables, and in additional tables of the Lustrum 1916-1920 will appear in the Annual Report of the Society. Reference to the control of the Meteorological Office having passed to the Air Ministry and to the resignation of Sir W. Napier Shaw, F.R.S., the director, and to the appointment of Dr. George C. Simpson, F.R.S., as his successor, will be found in the Observatory Report.

The Council much regret to have to record the loss by death of the following esteemed Members:—

Mrs. Emma Harriet Libby, aged 81, of Pendower, Falmouth, widow of the late Capt. Samuel Libby, R.N., a lady who for many years liberally supported the Society, and took a keen interest in the work.

George Tangye, the last surviving brother of the eminent Tangye family, who founded in Birmingham the well known engineering firm of "Tangye Brothers," of which, since the death of his brother Sir Richard, he has been the managing director. For over 60 years, this family has been identified with your Society and has sent valuable Exhibits to your Exhibitions. George Tangye was a man of kind and genial disposition, and anything affecting the best interests of the County always received his support. He was very liberal to your Society and took a keen interest in its work and Exhibitions, and his loss will be felt by all who knew him.

April 3rd.—Capt. Ettrick W. Creak, R.N., C.B., F.R.S., of the Hydrographic Department of the Admiralty, elected an Honorary Member in 1904, showed a personal interest in the work of the Society, and especially in the maintenance and records of the Magnetographs in the Observatory.

August 16th.—Sir Norman Lockyer, K.C.B., L.L.D., D.Sc., F.R.S., a celebrated Astronomer and Physicist, and at



one time Editor of "Nature." He was elected an Honorary Member of the Society in 1906. In the report of the Society for 1905 will be found a reprint of his Lecture to the Penzance Natural History Society on "An Early Chapter in the History of Cornwall—Cornish and Egyptian Monuments," also of an article by S. R. John, which appeared in the "Western Daily Mercury" on "Stone Memorials in the West," who built them, when and why? It was Sir N. Lockyer who started "The New Astronomical Theory" in a lecture before the Royal Society with reference to Stonehenge and the "Hurlers" in Cornwall and other Stone Circles. He considered the Hurlers as among the most interesting ancient monuments of the world, for all of it, including the Sight Line Stones, is still standing, and he expressed the hope that steps would be taken to protect it. He followed up his researches by inviting the co-operation of the Polytechnic Society, which led to the formation of the "Society for the Astronomical Study of Ancient Stone Monuments," of which Messrs. H. Henry Thomas, of St. Just-in-Penwith, and Horton Bolitho, became the Honorary Secretaries, and Major J. S. Henderson the Honorary Treasurer. The interest thus stirred in Cornwall and elsewhere in ancient monuments has been instrumental in promoting their preservation, as evidenced by the appointment in 1912, by the Cornwall County Council, of the committee for that purpose, who elected your President as their Chairman.

The scheme for the collection of Rural Lore by means of Elementary and other Schools in Cornwall, the mention of which at the last Annual General Meeting was the immediate cause of Sir Edward Nicholl's munificent offer of prizes, has developed considerably.

The Cornwall Education Committee adopted it in the form in which it had been suggested to them by the Royal Institution of Cornwall, and at their request a pamphlet of



directions and suggestions for the carrying out of the scheme was drawn up by your President. This was approved by the Council of the Royal Institution and was printed and circulated among the School Teachers of Cornwall by the Education Committee. Your President was also invited to address meetings of School Teachers on the subject. He has already given lectures in East Cornwall, at Launceston, St. Austell and Liskeard, and proposes to give further addresses for West Cornwall before very long. In consequence of the prizes offered through the Polytechnic Society by Sir Edward Nicholl, we have now a very considerable interest in the success of the scheme.

Early in the year, the Cornwall County Council reappointed the Committee for the Preservation of Ancient Monuments, which had been in abeyance during the war. Of this Committee as at present constituted fifteen of the thirty members are also members of the Polytechnic Society, including your President, who is Chairman of the Committee, and your Secretary. In consequence of a communication from the Chief Inspector of Ancient Monuments (Mr. C. R. Peers, F.S.A.), this Committee at a recent meeting adopted a suggestion of the Ancient Monuments Board and appointed "District Correspondents," the Education Districts in the case of Cornwall being taken as the basis, the idea being that these correspondents will report to the Committee (who, as "Chief Correspondent for Cornwall," will be in touch with the Ancient Monuments Board of England), any cases of possible danger to ancient monuments in their respective districts. It is hoped by this means to preserve from danger of destruction many of our ancient monuments which have hitherto been nobody's business.

The Ancient Monuments Board is particularly anxious to enlist the help of local Societies such as the Polytechnic and the Royal Institution of Cornwall, and the work of the County Committee acting in concert with these Societies on

the one side and the Board on the other, is likely to produce important results in the immediate future. The Act of 1913 for the protection of Ancient Monuments gives considerable powers to local authorities and to the Office of Works, but without the backing of public opinion Acts of Parliament are of little avail, and it is in the moulding of public opinion that Societies such as ours can be particularly useful.

The following very interesting Lectures were given in the Polytechnic Hall, Falmouth, free of charge, under the auspices of the Society and the Women's Social Institute. They were well attended and much appreciated. Messrs. Harris Bros. kindly lent the use of the Lantern and their Operator manipulated the slides.

February 27th.—“The Aims of the National Trust for Places of Historic Interest or Natural Beauty,” by S. H. Hamer, Esq.

April 30th.—“Belgium re-visited after the War,” by Major A. W. Gill.

May 7th.—“Rural Life in Denmark,” by J. Nugent Harris, Esq. (Chief Organiser of the Village Clubs Association of London).

It will be your duty to elect three Vice-Presidents in the place of Sir Thos. K. Rose, Canon J. S. Burns, and Prof. Henry Louis, who retire by rotation. The following members are recommended for election:—The Lord Bishop of Truro, Mr. John Chellew, and Mr. G. F. Thomas-Peter.

The Balance Sheet duly audited will be submitted by the Honorary Treasurer for your acceptance. It shows a balance due to the Treasurer of £168 17s. This is owing to the purchase of the Falmouth Hospital premises, and the high price of labour, material and printing, particularly in connection with the Exhibition.

# Hon. Treasurer in Account with the Royal Cornwall Polytechnic Society.

DR. 1920. CR.

	£	s.	d.
To Balance in Lloyds Bank, Falmouth	121	4	1
„ Donation, H.R.H. Prince of Wales	5	0	0
„ Donation, Sir Edward Nicholl, M.P., for Special Prizes	25	0	0
„ Members, Subscriptions for 1920 and Arrears	123	19	0
„ Rent of Polytechnic Hall	305	7	6
„ Rent of Committee Rooms	41	16	3
„ Dividends on War Bonds	23	15	0
„ Sale of Annual Reports	8	4	9
„ Entry Fees on Exhibits at Exhibition	10	10	0
„ Charges to Trade Exhibits at Exhibi- tion	128	13	10
„ Admission less Tax to Exhibition	62	1	0
„ Pictures Sold at Exhibition	2	2	0
„ Materials Sold from Exhibition	4	3	6
„ Entertainment Tax returned	3	0	0
„ Tickets Sold, Art Union of Cornwall	36	9	0
„ Acknowledgment Rent, Post Office	0	1	0
„ Sale of £100 50/0 National War Bonds			
„ Sale of 750 50/0 War Stock	728	16	3
„ Due to Treasurer	168	17	0
	<u>£1,799</u>	<u>0</u>	<u>2</u>

	£	s.	d.
By Salaries	120	0	0
„ Caretaker's Wages	52	0	0
	<u>172</u>	<u>0</u>	<u>0</u>
„ Insurances, Rates and Taxes	146	8	2
„ Travelling Expenses	14	4	0
„ Postages and Telegrams	27	14	5
„ Printing and Stationery	94	4	11
„ Printing Annual Report for 1918	58	15	7
„ Printing Annual Report for 1919	85	7	9
„ Labour and Material	221	2	11
„ Repairs and Renewals	21	18	9
„ Railway Carriage and Transport	13	13	11
„ Advertising	12	5	6
„ Rent of Caretaker's Rooms	13	0	0
„ Refreshments at Exhibition and Annual Meeting	15	17	10
„ Winding and Repairing Clock	1	15	0
„ Lighting	44	19	2
„ Books for Library	3	11	0
„ Agent's Fees, Packing Pictures, etc.	17	2	8
„ Acknowledgment Rent, Earl of Kim- berley	0	6	9
„ Insurance of Exhibits	4	15	0
„ Police during Exhibition	4	0	0
„ Money Prizes, Sir Edward Nicholl Special Prizes	25	0	0
Other Classes	4	15	0
	<u>29</u>	<u>15</u>	<u>0</u>
„ Transferred to Art Union	36	9	0
„ Rent of Exhibition Building	35	10	0
„ Paid for Pictures, Miss Rowse	2	0	0
„ Billposting	6	17	6
„ Concert Expenses	4	5	0
„ Purchase of Premises	700	0	0
„ Cheque Books	1	10	0
„ Bank Charges	8	0	4
„ In Secretary's Hands Dec. 31st, 1920	1	10	0
	<u>£1,799</u>	<u>0</u>	<u>2</u>

*Audited and found correct.*

W. W. J. SHARPE,                    }  
E. P. KESTIN,                        } Audit  
  } Committee,

3rd February, 1921.

# Royal Cornwall Polytechnic Exhibition, Camborne, 1920

## LIST OF AWARDS.

*Special Prizes given by Comdr. Sir Edward Nicholl, R.N.R., M.P.*

### Section B. Class 1.

#### MECHANICAL DRAWINGS.

Drawing of Rock Drill	...	Charles Pengilly	£1	10	0
Drawing of Gas Engine	...	C. F. Veale	1	0	0
H. Harris, Student of Roskear School	...	...	17	6	
K. Penberthy,	„	„	...	...	15 0
I. Charleston,	„	„	...	...	10 0
Thos. Harris,	„	„	...	...	7 6

### Section 3. Class 1.

#### SURVEYING PLANS.

Two Plans of Rosario Mine	...	Frank Trythall	£5	0	0
Plan and Sections of King Edward Mine, Ltd.,		Lt. H. C. G. Newton, M.C.	5	0	0
Plan of King Edward Mine	...	A. B. Rowe	5	0	0
„ „ „	...	G. W. Walker	3	0	0
„ „ „	...	H. H. Martin	2	0	0

#### MECHANICS.

Messrs. Vickers, Limited,	for Stand	Diploma of Honour.
Explosives Trades, Limited,	„	„
W. F. Stanley & Co., Ltd.	„	„
James J. Hicks,	„	„
Townson & Mercer, Ltd.	„	„
Climax Engineering Co., Ltd.	„	„
Telephos Limited, for Ventilating Tubes	...	Diploma of Merit.
Anglo American Oil Co., for Cooking Stove		„
East Pool & Agar Ltd., for Glass Models,		„
illustrating Plans and Cross Sections	...	„
Tehidy Minerals Ltd., for Plans and Cross		„
Sections	...	„

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Vickers Ltd. (T. Cooke & Sons) for Transit				
Theodolite ... ..	First Silver Medal			
Explosives Trades, Ltd., for Gas Mantles	„			
W. F. Stanley & Co., Ltd., for Transit				
Theodolite ... ..	„			
Vickers Ltd., for Concrete Machine	„			
R. Morton Nance, for Ship Models	„			
E. Haly, for Model of Ship's Lifeboat ...	Second Silver Medal			
— Berryman, for Automatic Tin Sampler	„			
M. Harvey Kitto, Underground Signalling				
Device ... ..	First Bronze Medal			
Joseph Coad, for Tin Concentrating Frame	Second	„		
G. V. Tregonning and G. T. Vivian, for				
Tube Mill ... ..	Second	„		
E. K. Andrew, for Model Engine and Model	£1	0	0	
James Richards, for Violin and Case ...	1	0	0	
Bedford Pedlar, for Odourless Saucepan ...	10	0		
Charles Penaluna, for Bent Iron Candle-				
sticks, etc., ... ..	10	0		
J. B. Letcher, for Tin Saving Frame ...	5	0		

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## ELECTRICAL.

Messrs. Wolf Bros. and Wilkinson, for Port-				
able Electric Motor ... ..	First Bronze Medal			
Henley's Wiring System ... ..	Diploma of Honour			
Everitt Edgecumb & Co., Ltd. ... ..	„	„		
Edison Swan Electric Co., Ltd. ... ..	„	„		

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## NATURAL HISTORY.

Miss H. Carlyon, Collection of British				
Orchids ... ..	First Silver Medal			
E. H. Davison, Collection of Cornish Vein-				
stones ... ..	First Bronze Medal			
H. R. Beringer, Collection of Minerals ...	„	„		
W. Brown, Collection of Alluvial Tin ...	„	„		
Christopher Bennett, Collection of Minerals, Second	„	„		

## ART NEEDLEWORK.

R. Davenport, Needlework Pictures	...	First Bronze Medal
Miss Edith Carter, Lace Scarf	...	Second „ „
E. O. Boase, Night Dress	...	Diploma.
Mrs. A. Clarke, Tablecloths	...	Diploma.
Private S. Smith, Cushion Covers	...	15 0
W. Hampton,	...	15 0

## FINE ARTS (Professional).

J. F. Hancock, Miniatures	...	Second Silver Medal
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## FINE ARTS (Amateur).

K. M. Hitchens, Still Life	...	Second Silver Medal
A. Feby,	„	„ „ „
G. A. Bryant,	„	„ Bronze Medal
R. H. Penpraze,	„	„ „ „
Alfred Opie, Oil Painting	...	„ „ „
A. C. Wade,	„	Diploma.
J. E. C. Boolds,	„	„
R. H. Penpraze	„	„

## PHOTOGRAPHY.

Frank Brown, Figure	...	First Silver Medal
L. J. Steele, Colour Photographs,	...	Second „ „
S. J. Ford, „ „	...	First Bronze Medal
E. Smithells, Photographs	...	„ „ „
Lionel Wood, Figure Study	...	Second „ „



## 89th Annual General Meeting.

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**T**HE eighty-ninth Annual General Meeting of the Royal Cornwall Polytechnic Society was held in the Library, Polytechnic Hall, Falmouth, on Thursday, 16th February, 1922, the President (Mr. Henry Jenner) presiding. Amongst the members present were Lord St. Levan, Mr. Wilson L. Fox, Mr. R. Barclay Fox, Mr. John Chellew, Major Luard, Major Cuthbert L. Fox, Mr. W. W. J. Sharpe, Mr. R. Morton Nance, Mr. Howard Fox, Mr. F. J. Bowles.

The President opened the Meeting, and read apologies for absence from Lady Mary Trefusis, Sir Courtenay B. Vyvyan, Sir Arthur Pendarves Vivian, the Rev. E. H. Enys, and Messrs. H. D. Acland, T. F. G. Dexter, H. F. Elkington, G. T. Petherick, and C. D. Middleton Wake.

The Secretary read the minutes of the last Annual General Meeting, which, on the proposition of the President, were confirmed.

The Report of the Council for 1921 was presented and read by the Secretary.

In moving the adoption of the Report, Mr. Jenner stated that he considered it very satisfactory, but regretted the financial position. Except for the temporary cessation of Trade Exhibitions, the Society's meetings, Excursions, etc., would be held as usual.—Mr. John Chellew seconded and the Report was adopted.

The Honorary Treasurer, Mr. E. P. Kestin, presented the Statement of Accounts for 1921, showing an adverse balance of £121, which he considered was due to the large amounts paid in rates and taxes, which had been steadily

increasing for years. He hoped, however, that during the present year the deficiency would be considerably reduced. He moved their adoption, which was seconded by Mr. J. G. Stephens and carried.

The Report of the Observatory Committee was presented and read by the Honorary Secretary (Mr. Wilson L. Fox), who supplemented it by giving some very interesting data. Falmouth for three weeks had been at the top of the sunshine records of Great Britain. Last year the towns of the South East had had an unusual amount of sunshine, but now Falmouth was taking the first place again, and visitors to the South West would realize that they made a change for the better when they came from Manchester with 14.7, to Falmouth with 77.5 hours of sunshine.

The President remarked that there was one thing Mr. Fox had not told the Meeting, and that was how much the Town and Observatory owed to him, but he (the President) believed that Mr. Fox's tact and management had been really responsible for the harmonious working of the matter, and he complimented him on the way in which he had managed the sunshine at the Observatory.

Mr. F. J. Bowles, who moved the adoption of the Report, also paid a tribute to the tact and perseverance Mr. Fox had displayed. It was due to Mr. Fox that they had been able to get through the troubled waters of the past year as well as they had, and the vast majority on the Town Council and in the Town were proud of the work he had done at the Observatory, and were keenly alive, if only from a commercial point of view, to the advantage of keeping the benefits of their climate before the public. He was sure that after the many years that the Observatory had done good service in Falmouth it would be the greatest of all mistakes to scrap it, and although it might be possible to obtain weather reports from other sources, such reports would not be of that thoroughly reliable impartiality, and would not carry the

weight that the reports from the Observatory had always carried. He trusted that next year (the first year of the work under new conditions) the matter would be found to be so satisfactory that there would be no hesitation in the carrying of it on over a greater period.

Mr. Pearse Jenkin, who seconded, hoped such an arrangement would be possible. Falmouth would be well advised to keep such work to the fore, and the man in the street should realize more than he did that there was an enormous advantage in having a continuity of records. The report was adopted.

Mr. A. Pearse Jenkin then read the report of the Cornwall Rainfall Association and moved its adoption, which was seconded by Mr. W. L. Fox and carried.

Mr. R. Barclay Fox, proposed a vote of thanks to the President for acting in that capacity for the past six years. They, as a Society, were proud of many things, and one of the things of which they were most proud was the list of distinguished men who had acted as Presidents up to the present day. That list was composed not only of the leading people of the County, but also of some of the eminent literary men of the Country. He was sure there was no one connected with the Society, who would not agree that the Society had lost none of its prestige through Mr. Jenner—(applause). His name would, he felt, be read with pride when they looked through that long list. Some Presidents had given papers and lectures of great interest and been able sometimes to attend committee meetings, and help to guide the business of the Society. Those members on the Committee, and others who knew, would agree that they had never had a President in their memory who had shown those attributes in such a marked manner as had Mr. Jenner (though he would in no way belittle any former President). Personally, he hoped, that although they were going to lose him as President, they would not lose him at their meetings and committee meet-

ings. He moved that their heartiest thanks be proffered to Mr. Jenner for his work as President for the past six years.

Lord St. Levan seconded. There could be no doubt that the Society acted very wisely indeed when they asked Mr. Jenner to act as President for a second term. They all knew that during the second three years of office he acted up to the high reputation he had enjoyed for the previous three years. Not only had Mr. Jenner acquired a great reputation as an antiquarian, but he was also in close touch with modern affairs, for he had looked after the Society and kept it up to date. They had passed through a bad six years and not everybody could have kept the Society going so well during that time as Mr. Jenner had. It had been a great advantage to have had him in the chair, and they were all sorry that the time had come to an end, and he hoped that he would still continue to give them further lectures, which were most excellent from every point of view, and also included a saving sense of humour.—The motion was carried with acclamation.

Mr. Jenner, in thanking the meeting, said that he felt extremely sorry that his term of office had come to an end; he had enjoyed it immensely. The way in which the whole Society supported him in everything had been very satisfactory. Although the members could not have always agreed with him, they took it very nicely. He again thanked the gathering for the way in which they had supported him during his term of office, and although he must bid them farewell as President, he would not do so in any other way. Now it was his duty to propose a new President, and the Council recommended Mr. Wilson L. Fox. When one looked back on the list of Presidents and thought of what Mr. Fox had done since he joined the Society in 1865—he (the speaker) was only a boy at school then, he didn't know what Mr. Fox was—one wondered why he had not been made President long before. The work he had done on behalf of the

Society did not appear except in the reports of the Observatory Committee, but he, and every member, knew well how immensely useful Mr. Fox had been. He had had during his term of office a tremendous advantage which Mr. Fox would not have, and that was the advice of Mr. Wilson Fox. He didn't know how he could have got along without him, and he could assure them they would have a very good President if they elected him. There was another reason. When one considered the history of the Society, one remembered the family to which Mr. Fox belonged, and how much the Society owed to that family. They had helped to found it in 1833 and had kept it going ever since, and he was glad to see so many of the family present that afternoon.

Mr. F. J. Bowles seconded the proposal. He felt that though they greatly regretted Mr. Jenner's retirement from the Chair, yet they were glad they were not to lose his active interests in anything that concerned the Polytechnic Society. He did not know that he could add very much to what the Chairman had said except from his personal experience. It was forty years since he joined the Society, and during the whole of that time, presidents had come, presidents had gone, some ornamental, some who tried to be useful, but no one of them had accomplished so much in their three years of office as Mr. Jenner had done, and through the whole of the presidential periods Mr. Fox had carried out his unostentatious work. He wished him a useful term of office in advancing the interests of the Society by his quiet work, and hoped he would be blessed with health and strength to carry out the duties. He felt that in accepting the office Mr. Fox would have the members behind him.—The proposal was carried unanimously.

The new President stated he had never dreamt in his wildest moments of occupying the seat he now filled. He realized the great honour which had been conferred on him and he felt that his heart and soul had always been with the



Society, in that he had done all that he possibly could for it, and now they had bestowed on him the responsibility of taking Mr. Jenner's seat. He was sure he could not fill that chair as well as Mr. Jenner had. He would like, in conclusion, to quote the words of his uncle, Mr. Charles Fox, of Trebah, when that gentleman, in 1871, was elected to the position the speaker now filled. They were:—"I cannot forget the ability with which my predecessors filled this chair, or my own want of skill rightly to discharge the duties of the honourable post to which you have been pleased to call me, or the responsibilities which it involves. If this Society were ephemeral in its character and occupied only in trifles of local interest, its failure or success would be of little moment, but as it seeks to promote much that distinguishes civilised from savage men, to minister to his refinement, his comforts and his usefulness, its broad aims deserve the thoughtful care and help of all connected with it. Thus may its efforts be well directed happily to combine the useful with the pleasing, in Science and Art."

The new President (Mr. W. L. Fox) then proposed the following:—Mr. Henry Jenner, Dr. G. C. Simpson, and Sir Richard Gregory as Honorary Members, this was seconded by Major Luard and carried unanimously.

On the resolution of Major Cuthbert L. Fox, seconded by Mr. W. W. J. Sharpe, the following Vice-Presidents were elected:—Lady Mary Trefusis, Messrs. Henry Jenner, E. H. Davison, Walter Rogers, and R. Morton Nance.

The Secretary proposed the following names for election as subscribing members and said that the greatest asset a Society could have was the quality and constitution of its members' list, and he was proud to say that the names proposed would meet with the approval of all present:—Percy Adamson, Rev. J. H. Beecroft, D. M. Horsford, R. Vaughan Jones, Mrs. R. V. Jones, Ambrose Mayne, Francis R. Rodd, Captain Dennis Shipwright, Edgar Thurston, Rev.



R. T. S. Tolsen, Major Guy S. M. Taylor, E. W. Middleton Wake.

The proposition was seconded by Miss Whitburn and carried unanimously.

On the resolution of Mr. W. W. J. Sharpe, seconded by Major Luard, a vote of thanks was accorded to:—Mr. H. D. Acland, who acted as delegate to the Corresponding Societies of the British Association; to Mr. J. Hambly Rowe, who acted as Delegate to the Celtic Conference; and those who read papers and assisted at the Summer Meeting, and to the Judges at the Exhibition.

## Report of the Council for 1921.

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**T**HE Report of the Council of the Royal Cornwall Polytechnic Society for 1921, shows that the Society has returned almost completely to pre-war conditions, except so far as its activities have been hampered by continued high prices. The usual Meetings and Excursions have been held on the same scale as in the years before 1914, and the educational objects for which the Society was principally founded have been successfully carried out, particularly in giving facilities, of which the Education Committee of the Cornwall County Council has continued to take advantage, for the exhibition and criticism of the works of students in the various schools of the County.

The Summer Meeting was one of the most successful that has been held. The first day, July 5th, was devoted to a motor excursion to Castle-an-Dinas, St. Columb, Carnanton, Mawgan, Lanherne, etc., and about 50 of your members embraced the opportunity of visiting one of the most interesting and beautiful districts in Cornwall. The party assembled at Truro (the Falmouth members coming by river, which gave them the opportunity of seeing some 46 large steamers, some of which were ex-German, sent for sale, and the others laid up owing to the depression in shipping), and proceeded by way of Tresillian, Ladock and Fraddan to Castle-an-Dinas, which was reached at 11.30 a.m. Here Mr. E. H. Davison gave a very interesting explanation of the geological and mineralogical characters of the place, and your President (Mr. Henry Jenner) gave a short paper on its history and archæological features, which were much appreciated. The wolfram mine in the neighbourhood (temporarily closed) was a source of special interest to those who inspected it.

The party then proceeded to St. Columb and were met by the Rector (the Rev. S. J. Childs Clarke), who kindly escorted them through the Church, which is one of the finest in the County. In the South Chancel aisle, rebuilt by Sir John Arundell of Lanherne in the 15th century, were seen the interesting brasses of the Arundells, and in the North aisle the monuments of the Vyvyans of Trewan were also examined. After luncheon, Carnanton House, situated in very beautiful grounds, was visited. Here, by the kind permission of its owner (Mr. Humphrey C. Willyams), the fine collection of pictures was inspected. Afterwards a walk of about a mile through the woods, brought the party to Mawgan where they were met by the Rector (the Rev. H. H. Tweedy), who kindly showed them the Church and explained its history. Thence the visitors went to Lanherne Priory and the Chaplain (the Rev. J. Shryane), showed them the Chapel. Lanherne is interesting as being the old Manor House of the Arundells of Lanherne, which in 1796 was assigned by the then owner, Lord Arundell of Wardour, to a Convent of Carmelite Nuns, who had been driven from Antwerp by the Revolution. The house has always been in Roman Catholic hands, and there is a tradition that the lamp before the Tabernacle in the Chapel has been kept burning continuously since pre-Reformation days.

On the return journey Rialton, near St. Columb Minor, was visited, and the members had the opportunity of inspecting this old and interesting house, which was once a grange of the Monks of St. Petrock at Bodmin, who held the Manor at the time of the Domesday survey in 1087. After the dissolution of the monasteries it was leased by the Duchy to the family of Mundy, and later to the Godolphins. After the expiry of their lease it was sold to Thomas Rawlings, of Padstow. Later it again became the property of the Duchy, to which it still belongs. The present house was built by Prior Thomas Vivian, Bishop of Megara (whose tomb in

Bodmin Church is well known), in the early 16th Century. Part of it was destroyed by fire in the 18th century but there are considerable remains left, including a fine oriel window (in the glass of which are the Arms of Bodmin Priory, three Salmons, and the initials of Prior Vivian), and a beautiful canopied well.

Tea was provided at St. Columb Porth, which brought to a close a most enjoyable day in perfect weather, and your thanks are due to those gentlemen mentioned who contributed so much to the success of the Excursion.

The papers read by Mr. Davison and your President will appear in the next Annual Report, which will be published in the near future.

On the second day, July 6th, a Scientific Meeting was held at the Polytechnic Hall, when the chair was taken by your President, who gave an address on "The Preservation of Ancient Monuments." This was followed by a paper read by Mr. E. H. Davison on "Recent Additions to our Knowledge of Cornish Geology," and a paper by Mr. R. Morton Nance on "Celtic Words in Cornish Dialect." The members then proceeded to Arwenack House, where Mr. F. J. Bowles gave a paper on "The History of Arwenack Manor," and at its conclusion the party was entertained at tea by Mr. and Mrs. John Chellew. The Mayor and Corporation of Penryn kindly lent the beautiful "Killigrew Cup" for exhibition.

The Meeting was concluded by a *Conversazione* and Reception, on the third day, July 7th, open to the members and their friends, when an excellent musical programme was given by the Falmouth Harmonic Quartette and other vocalists, to whom your thanks are also due.

An Exhibition of the work of the Students of the Schools of the Cornwall County Council, and also of other Public and Private Schools of the County, was held at the Polytechnic Hall, which was open to the Public. The exhibits were very creditable, and your Council is pleased to state that they

showed a marked improvement both in quality and number of entries. Substantial prizes in money, medals and diplomas were awarded. Special mention should be made of the surveying plans, etc., sent by the Students of the School of Mines, Camborne, the cookery exhibits of the various County Council Domestic Centres and specimens of illuminations by the Penzance School of Art, which were very commendable. Your thanks are due to those members of the Society who kindly officiated as Judges on the occasion.

Your Council has been very much concerned to hear of the depression in Cornish Mining, one of the principal industries of the County, which during the past year has been more severely felt than on any previous occasion. Through no fault of their own but entirely on account of the low price of metal coupled with the high prices of labour, coal and other materials, practically all the more important mines have been compelled to suspend operations, thus throwing thousands of miners out of employ. Already, however, things generally are a little brighter and your Council venture to hope that this suspension is only temporary, and with improved conditions most of the mines will again be in full activity. The County is one of the richest mineral areas in the world and it is not reasonable to suppose that all its mineral wealth is exhausted, and it is to be hoped that some of the various propositions of mining experts may be successfully carried out and Cornwall again become the important mining centre that it was formerly.

In view of the abnormal condition of the mining industry and things generally, your Council has decided not to hold the usual Exhibition which would normally be held in 1922. This does not, however, refer to exhibits of Students' work and handicraft.

Two very successful Lectures were given during the Autumn Session at the Polytechnic Hall, the arrangements being carried out in co-operation with the Women's Social

Institute. One was by Miss Procter, on "Myths and Marvels of Astronomy," on the 28th October, and the other by Mr. T. F. G. Dexter, in November, on "Visitors to Cornwall long long ago." Both of these Lantern Lectures were well attended and much appreciated.

Mr. H. D. Acland again kindly acted as your Delegate at the meeting of the Corresponding Societies of the British Association, which was held at Edinburgh in September. His report will appear in the next Annual Report.

Mr. J. Hambly Rowe consented to act as your Delegate at the Celtic Conference, held at Douglas in the Isle of Man, from the 4th to the 14th of July, and was very well received as a Representative of Cornwall. The Congress was probably the most successful ever held. Many interesting papers were read, concerts of Celtic music were given and perhaps most interesting of all, on the Sunday, a service was held in the fast dying Gaelic of the Isle of Man, which is now in the position that the Cornish language was two centuries ago.

As explained in your last Report, the Meteorological Office terminated its agreement with your Society, and stopped its Annual Grant towards the expenses on the 31st December, 1921. Arrangements have, however, been made (which include a contribution from the Falmouth Town Council for one year) to continue the various observations. Full particulars by Mr. W. L. Fox, the Hon. Secretary of the Observatory Committee, will be printed in the annual report.

The Council desires to express its appreciation of the work of the Cornwall Rainfall Association, of which Mr. A. Pearse Jenkin is the Hon. Secretary. He has collated monthly data from about 50 stations and circulated the information regularly every month to each contributor.

Your Council much regrets to have to record the loss sustained by the deaths of some of your oldest and most esteemed members:—

February 26th.—Robert H. Kirton, a brother-in-law of



the late Sir Richard Tangye, and private secretary to the late George Tangye, and Curator of the James Watt Museum, Cornwall Works, Birmingham. In 1909 an interesting collection of objects from that Museum was exhibited in connection with the Summer Meeting at Falmouth, and Mr. Kirton was in charge of them, and in appreciation of his services he was elected a Life Member. He was a member of the Society of Friends and his simple and genial disposition endeared him to all who knew him intimately.

March 23rd.—John Badger, aged 76, who joined the Society on coming to Falmouth to reside some years ago. He took a great interest in the work of your Society and was a member of the Finance and Executive Committees, and a Vice-President at the time of his death. His loss will be much felt.

April 7th.—Matthias Dunn, a highly esteemed member, and a leading authority on the Fishing industry. He was the son of the late Matthias Dunn, a past Vice-President and contributor of many valuable papers to your Reports.

June 7th.—H. Orme Fox, who became a member of your Society on his returning to Falmouth, on his retirement after a very distinguished career in the Ceylon Civil Service. He was the son of Mr. Howard Fox, a former Vice-President of the Society, and was well known to many of the members by whom he will be deeply regretted.

September 20th.—E. B. Beauchamp, a former Vice-President and member of the Council, who generally attended the Meetings and Exhibitions of your Society. He was interested in various County matters and acted as Chairman of the East Kerrier Justices up to the time of his death at the age of 88. He had been a member of the Bench of East Kerrier Justices since the 6th November, 1862, a period of 60 years, and chairman for a period of 30 years up to the time of his death, and was much respected by all who knew him.

September 26th.—Mrs. Anna Rogers, a loved and

esteemed lady who died at the wonderful age of nearly 105, at Falmouth. She was the widow of the late Rev. William Rogers, Rector of Mawnan, both having been warm friends of the Society.

October 9th.—Sir George J. Smith, had been a member of the Society for a great many years, a member of the Council, and was Vice-President in 1890. He was one of the most active public men in the County, on the County Council, and on various Education and other Committees, and an enthusiastic supporter of the Volunteer movement from its beginning.

November 12th.—James Wickett, who died suddenly at his residence, Clinton Road, Redruth. He was a past Vice-President and member of the Executive Committee, which he regularly attended up to the time of his death. Although he had reached the age of 80 he was very active. For over 60 years he was intimately associated with mining, and was a shareholder and director of several of the more important mines. He was very optimistic regarding the potentialities of the Cornish mines, an opinion based on long and intimate knowledge of the mineral resources and recuperative power of West Cornwall. He was also an expert and keen collector of minerals, and his collections of tin specimens is one of the finest in the kingdom. He acted as judge in the Natural History section of your Exhibitions, and his loss will be severely felt not only by the Society but the County generally.

Your President (Mr. Henry Jenner) retires to-day, on the expiration of his second term of office, his re-election for a second period of three years as President in 1919 was perhaps the greatest compliment ever paid to a President since the time of Sir Charles Lemon. Mr. Jenner's devotion to the work of the Society and the great assistance given during the years of the War will always be remembered, and his brilliant addresses and papers have added considerably to the value of your transactions.

Your Council unanimously recommends to you Mr. Wilson Lloyd Fox, as your President for the next three years, being quite convinced that its choice will receive your approbation. He joined your Society 57 years ago, in 1865, and on the retirement of the late W. P. Dymond in 1877, was elected Honorary Secretary of the Observatory Committee. You are all aware of the faithful manner in which, for 45 years, he has carried on the duties of that office. He prepared the Historical Synopsis of the Society for the 81 years (1833-1913), in two parts; Part 1 (1833-1881) presented by him to the Society on its year of Jubilee, 1882; and Part 2 (1882-1914) in the year 1914. He has also rendered valued assistance for many years as a member of the Executive Committee and Judge at your Exhibitions, and was made a Vice-President in 1885, and an Honorary Member in 1915. Your Council feel sure that he will prove a very worthy successor to the many distinguished men who have in the past filled this office. It is also very fitting that a member of the family to which the inception and institution of your Society is so largely due should be elected as its head, which is the greatest honour you can confer.

It will also be your duty to elect five Vice-Presidents in the room of the Right Rev. the Lord Bishop of Truro, the Right Hon. Viscount Falmouth, Sir Robert Harvey and Sir Edward Nicholl, M.P., who retire by rotation, and the late John Badger, who died during his term of office. They recommend the names of the following members for election: Mr. Henry Jenner, Lady Mary Trcfusis, Walter Rogers, E. H. Davison, and R. Morton Nance.

The following names are recommended as Honorary Members of the Society: Mr. Henry Jenner, M.A., F.S.A., Dr. G. C. Simpson, C.B.E., D.Sc., F.R.S., Director of the Meteorological Office, and Sir Richard Gregory, F.R.A.S., F.J.I., Meteorological Office.

The financial position has been causing your Committee

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some anxiety. For the first time for many years the year started with an adverse balance, viz: of £168. Owing to the heavy demands for rates and taxes and the increased cost of labour and material, the expenses of your Society have largely increased, without a corresponding advance in its receipts.

Thanks, however, to the number of new members that have joined your Society during the year, resulting in a larger amount received in subscriptions, this balance has been reduced by nearly £50, and it is hoped by the exercise of every reasonable economy to reduce it still further during the present year. Among other economies it is now proposed to lessen the very great expense of printing, by running two years of the report (1921-1922) into one.

The balance sheet, duly audited, will be submitted for your acceptance by the Hon. Treasurer.

# Hon. Treasurer in Account with the Royal Cornwall Polytechnic Society.

DR.

1921.

CR.

	£	s.	d.		£	s.	d.
To Balance, Cash in Secretary's hands, 1st January, 1921 ... ..	1	10	0	By Due to Treasurer, Jan. 1st, 1921	168	17	0
.. Donation H.R.H. The Prince of Wales ... ..	5	0	0	.. Salaries ... ..	120	0	0
.. Interest, Sir Edward Nicholl, M.P., Special Fund ... ..	25	0	0	.. Caretaker's Wages ... ..	52	0	0
.. Members' Subscriptions ... ..	168	12	0	.. Insurances, Rates and Taxes ...	151	2	2
.. Rent of Polytechnic Hall ... ..	303	18	8	.. Postages and Telegrams ... ..	23	5	7
.. Rent of Committee Rooms ... ..	21	17	6	.. Printing and Stationery ... ..	21	10	5
.. Rent, Women's Unionist Club ...	6	0	0	.. Labour and Material ... ..	49	14	3
.. Admissions to Summer Meeting ...	3	1	0	.. Railway Carriage ... ..	3	7	11
.. Tickets for Excursion, Summer Meeting ... ..	28	10	0	.. Travelling Expenses ... ..	8	7	2
.. Collections at Lectures ... ..	3	17	8	.. Cinema Licenses ... ..	1	5	0
.. Sale of Reports ... ..	17	0		.. Hire of China, Summer Meeting	1	0	4
.. Cornwall County Council, Grant for 1920 ... ..	30	0	0	.. Judges' Fee ... ..	1	10	0
.. Cornwall County Council, Grant for 1921 ... ..	30	0	0	.. Cash Prizes ... ..	24	1	2
.. Space in Exhibition ... ..	4	0	0	.. Medals ... ..	26	1	3
.. Acknowledgment Rent ... ..	1		0	.. Engraving Medals ... ..	1	16	8
.. Sale of Material ... ..	1	15	0	.. County Council Certificates ...	6	12	6
.. Balance ... ..	121	5	6	.. Carriages & Motors for Excursion	25	13	0
				.. Refreshments ... ..	21	0	8
				.. Advertising ... ..	15		0
				.. Electric Light ... ..	9	10	0
				.. Coal ... ..	7	1	6
				.. Clerical Assistance .. ..	2	2	0
				.. Expenses in connection with Annual Report ... ..	7	12	10
				.. Library Expenses ... ..	2	13	10
				.. Acknowledgment Rent ... ..	1		0
				.. Bank Charges ... ..	18	4	1
	£755	5	4		£755	5	4

*Audited and found correct.*

F. L. BOWLES, W. W. I. SHARPE, E. P. KESLIN,	}	Audit Committee.
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2nd February, 1922.

## Summer Meeting & Excursion, 1921.

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**T**HE Excursion of the Royal Cornwall Polytechnic Society for 1921 was not only the most successful that has been held since the beginning of the Great War, but probably one of the best that the Society has ever had. The programme was a large one and was effectively carried out, and the weather was perfect.

The motor charrs-à-banc of Mr. Blewitt, of Hayle, were timed to leave Hayle Station on the arrival of the 8.32 train from Penzance, and several members of the party joined them there, others joining at Camborne and Redruth, and all arrived at Truro Station at 9.40, where they found those who had come by train from Falmouth. The cars then proceeded to Boscawen Bridge to await the arrival of a much larger party from Falmouth, who had left the Custom House Quay by steamboat at 8.30 and had gone by river to Malpas, where they were met by conveyances to take them to Truro. The river journey was a very pleasant one, and was made interesting also by the sight of numerous vessels, some of them formerly German-owned ships and other steamships laid up on account of the trade depression. Good time was kept and the start from Truro began at close upon scheduled time.

The party consisted of the following members and their friends:—Mr. Henry Jenner (President) and Mrs. Jenner, the Very Rev. Canon J. S. Burns, the Rev. E. H. Enys, the Rev. R. Moody and Mrs. Moody, the Rev. R. Rider, Major Luard, Commander Arthur A. Rogers and Mrs. Rogers, Dr. A. B. Green and Mrs. Green, Dr. J. L. Lawry, Dr. W. J. Stephens, Mr. and Mrs. H. E. Bramble, Mr. and Mrs. J. Chelley, Mr. and Mrs. T. F. G. Dexter, Mr. and Mrs. W. L.



Fox, Mr. E. W. Newton (Secretary) and Mrs. Newton, Mr. and Mrs. R. Morton Nance, Mr. and Mrs. G. Penrose, Mr. and Mrs. W. W. J. Sharpe, Mr. and Mrs. W. Upton, Messrs. F. J. Bowles, E. H. Davison, E. J. Moseley, J. V. Newton, and James Wickett, and the Misses Barclay, Hichens, R. Newton, Rawlings, Rouse, Stephens and Unwin. The Revs. S. J. Childs Clarke, H. H. Tweedy and J. Shryane, and the Misses Hoblyn joined the party later.

The route was by way of Tresillian, Ladock, Fraddan, St. Columb Road Station and Trekenning to Castle-an-Dinas, where the first halt was made, and the party walked to the top of this very interesting Celtic hill-fort. This consists of a doubly trenched enclosure about 700ft. by 500ft. in extent, with its ramparts and ditches in very good preservation. Its date is unknown, but it belongs to a not uncommon type of hill-fort, which is not likely to be older than the first appearance of the Brythonic Celts in Britain during what is known as the "La Tène" period of the Iron Age, perhaps about B.C. 400, and it may be a good deal later. Like so many of these forts, it was no doubt used for a very long time, probably even down to the Saxon invasion of Britain in the late 5th century. Indeed its traditional association with the historic Arthur, a tradition quite independent of the mediæval romances, points to a still later use. Besides the probable historical association, there is great interest attaching to the geology of the hill, coming as it does at the junction of the slate and the granite, and having under it a lode of wolfram, which has recently been worked. Two papers, which appear elsewhere in the Report, were read at the summit, one by the President (Mr. Henry Jenner) on the history and archæology of the hill, and one by Mr. E. H. Davison on its geology. After the reading of the papers, Mr. Davison conducted the party to the wolfram mine at the foot and explained its workings, and later Mr. J. S. Salmon, of St. Columb, exhibited a silver-covered ball which he had made for the annual hurling match of Shrove Tuesday.

Leaving Castle-an-Dinas rather late according to the times in the programme, for the hill-fort and its surroundings had proved to be even more interesting than was expected, the party proceeded to St. Columb Major, where the Rector (the Rev. S. J. Childs Clarke) met them at the Church and kindly showed them over it. This is one of the finest churches in Cornwall. It consists of a chancel with aisles, transepts, a nave of three bays with aisles, north and south porches, and a west tower. The arcades of the nave and the south porch with a chamber above it are of the early 14th or perhaps the late 13th century, and the transepts and most of the tower are very little later in date. The south chancel aisle originally founded as a chantry by Remphrey Arundel, who died in 1340, was rebuilt by Sir John Arundel of Lanherne in the 15th century, and contains very good brasses and other monuments of the Arundell family. On one of these, that of a Sir John Arundell who died in 1592, and Anna (Stanley) his wife, who died in 1602, there is an inscription which states that they were buried "*ubi intemerata fulgent sacra,*" which certainly seems to mean that Mass according to the old rite was still being said in the chancel aisle as late as 1602. The chancel was formerly about ten feet longer, but the projecting part of it was destroyed in 1676 by an explosion of gunpowder which had been stored there. The north chancel aisle contains monuments of the Vyvyans of Trewan. The original stone mensa of the high altar was discovered in 1846 and restored to its place. On either side of it are standard candlesticks of good design in wrought iron, to which Mr. Jenner called attention because they had been given in commemoration of his own birth in 1848 by his father, the late Right Rev. Bishop Henry Lascelles Jenner, who at that time was curate at St. Columb. The fine modern rood screen was designed by Mr. George Prynne. There are many excellent carved bench-ends of the 15th century, and a good deal of carved wood work in the

roof. In the churchyard is a particularly beautiful Celtic cross, which is said to mark the burial place of St. Columba, virgin and martyr, the patron saint, about whom a curious legend is told by Nicholas Roscarrock, who alleged that he got it from a life of her in Cornish.

Thanks to the good management of Mr. and Mrs. Newton an excellent luncheon was served at the Red Lion Hotel, after which the party left St. Columb in the *chars-à-banc* and proceeded to the west lodge of Carnanton, whence, the roads not being suitable for the vehicles, they walked to Carnanton House. Here they were received by Mr. and Mrs. Willyams, who very kindly allowed them to see the fine collection of pictures and other objects of interest. The house was built in about 1742 to take the place of an older one which was burnt down. It contains fine panel and plaster work of the period, and the dining-room is a particularly beautiful room. A new wing of one story, containing a large drawing-room and library, was added in the 19th century. Among the pictures may be mentioned a fine portrait of Charles II., several religious subjects, original or copies, of Italian, Dutch and Flemish old Masters, and a very good early Opie, a portrait of the great-grandfather of the present owner. The manor of Carnanton is mentioned in Domesday Book as being held under the Earl of Cornwall by one Turstinus. Later it came to the Nevilles, Earls of Warwick. Early in the 16th century it became the property of the Noyes of Pendrea in St. Buryan, the most famous of whom was William Noye, Attorney General of Charles I. His second son and eventual heir, Humphrey, left an heiress, who married John Willyams, of Roseworthy in Gwinear, and dying without issue left Carnanton to her husband. The present owner descends from the second wife of this John.

After spending some time in looking at the house and its contents, the party, after expressing most grateful thanks to Mr. and Mrs. Willyams, proceeded, some by road and some

through the beautiful woods, to St. Mawgan Church, where they were met by the Rector (the Rev. H. H. Tweedy), who kindly showed them over it. This church is dedicated in honour of St. Mawgan, Meugant or Maucan, son of Gwyndaf ap Emyr Llydaw, Prince of Armorica, a member of the College of his cousin St. Iltyd at Llantwit Major in Glamorgan, who also founded churches in Kerrier (St. Mawgan in Meneage), at Llanfeugan in Brecon and elsewhere in Wales, and at La Meaugon (originally Lan-Meaugon), near St. Brieuc, and elsewhere in Brittany. It consists of a chancel, a nave of four bays, a continuous south aisle of six bays, a south porch and a tower. It is of various dates, the font being late Norman, the cruciform ground-plan and the lower part of the tower of the 13th century, the chancel aisle arches of the 14th and the nave arcade of the 15th. A very interesting rood screen of usual type bears the arms of Arundell quartering Carminow, and there are more than forty carved bench-ends of the 15th century. There is also an interesting carved pulpit of 1553, the panels of which bear the Instruments of the Passion. In the churchyard there is an especially fine 15th century cross of Catacluse stone with sculptured canopies and figures.

From the church the party proceeded to Lanherne, the old manor house of the Arundells. Alice, daughter of John de Lanherne, the last of the old family, married in 1231 Remphry Arundell of Trembleth in St. Ervan, and thus the Arundells acquired the property. In the time of Henry VIII. Sir John Arundell of Lanherne gave Wardour Castle in Wiltshire to his younger son Sir Thomas, who was thus the first of the separate younger line, the representative of which two centuries later became the head of the house. Sir John Arundell, the last of the senior line, died in 1701, and the manor passed to his grandson, Richard Beiling, whose daughter brought it by marriage to Henry, seventh Lord Arundell of Wardour, in 1739. In 1796 the house was assigned by the then Lord Arundell to a convent of Carmelite

nuns, who had been driven from Antwerp by the Revolution, and this community has inhabited it ever since. The house has a fine front of the 16th century and there is work of an earlier period in some parts of it. The chapel, for instance, has a 15th century window in it. Outside the door of the chapel is an ancient cross, brought there long ago from Chapel Close, Roseworthy, Arundell property in Gwinear. It has on it an interlaced pattern of Celtic work and two inscriptions, one which apparently consists of two names, BR EID ET IMAH, and the other RUNHOL. It is noteworthy that the same name Runhol occurs also on a cross of very similar design in Sancreed Churchyard. It is perhaps the name of the maker. The chapel, which is in the oldest part of the house, has nothing of much interest in it. The modern reredos is of good design and there are one or two fairly good pictures, but the great interest is in the tradition that, since the house has always been in Catholic hands, the lamp before the Tabernacle has been kept continuously burning since before the Reformation. There are very few houses that can boast of such a continuity. The Rev. J. Shryane, the chaplain, was good enough to show the party this chapel, which, as the Order is an enclosed one, is the only part of the house that can be shown.

From Lauherne the party proceeded to Rialton (so-called) Priory. This house, now a farm, was once a grange, or country-house of the Augustinian Canons of St. Petrock at Bodmin, who held the manor at the time of the Domesday Survey in 1087. After the dissolution of the monasteries it came to the Duchy of Cornwall and was leased to the family of Mundy, and later to the Godolphins. Sidney Godolphin was created Baron Godolphin of Rialton by Charles II., and when later he became Earl, his second title was Baron Rialton. On the expiry of the Godolphin lease the Duchy sold the manor to Mr. Thomas Rawlings, of Padstow, but at his death it was again sold, and eventually became Duchy property, as it still is. The present house was built by Thomas Vivian,



Bishop of Megara, the last Prior but one of St. Petrock, Bodmin, who died in 1533. His tomb in Bodmin Church is well known. Part of the house was destroyed by fire in the 18th century, but there are considerable remains left, including a room with a fine oriel window, in the glass of which are the arms of Bodmin Priory (three salmons) and the initials of Prior Vivian, and several other rooms. In the courtyard is a particularly beautiful canopied well, and there are still remaining ruined walls of the burnt portion. The present tenants, who thoroughly appreciate the beauty and interest of their house, were excellent guides, to whom the thanks of the party were cordially given.

There was not time to visit the inscribed stone, which has been read as BONIMIMORI ILLI TRIBUNI—perhaps the middle word is really FILII, but it is not easy to conjecture without seeing it. It is at some distance from the house. Nor was there time to visit St. Columb Minor Church, though its fine tower, one of the tallest in Cornwall, was seen as the party passed by on the way to St. Columb Porth.

The last item in the programme was tea at Porth. The arrangements for this were in the hands of Miss Ruby Newton and Miss Stephens, and very well they did it. After tea Mr. Wilson Fox proposed votes of thanks to the President for his address and pilotage, to Mr. Davison for his geological paper, and to Mr. Newton for his most efficient planning of the excursion and for the success with which it was carried out. Thus ended a most successful excursion, and there was nothing left but to return home, some by way of Truro and others by Trevemper Bridge, Perranzabuloe, Zelah, Camborne and Redruth. During the stay at Porth the tide was up, so it was not possible to visit the celebrated caverns close by, but that mattered but little after so full a day.

On the following day a meeting was held at the Polytechnic Hall, Falmouth, at 2.30. The President gave an address on "The Preservation of Ancient Monuments,"



which was followed by a paper on "Recent additions to our knowledge of Cornish Geology," by Mr. E. H. Davison, and another on "Celtic words in the Cornish Dialect," by Mr. R. Morton Nance. These three appear in another part of the Report. The party then adjourned to Arwenack House, where a most instructive paper on the history of Arwenack Manor was read by Mr. F. J. Bowles, and the interesting fragment of the old mansion which still remains inhabited, was shown by Mr. and Mrs. John Chellew, who afterwards very kindly entertained the company at tea. Mr. Bowles's paper will appear later in the Report.

On the following day, Thursday, July 7th, a *Conversazione* and Reception was held at the Polytechnic Hall at 8 p.m. There was a very small attendance, which was a pity, considering that the concert of music by the Falmouth Harmonic Quartette and other vocalists was exceedingly good.

## Summer Meeting, 1921.

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Open to Students of any Mining or Technical School:—

Class 3. (a) Collections of Geological or Mineral Specimens, which should be correctly named and accompanied by a written description—

First Prize £3, and Certificate for Collection of Cornish Metallic Minerals and paper describing them, John Vivian Newton, School of Mines, Camborne.

Class 3. (b) Papers describing the Geological and Mineral Features of any District, illustrated where possible by specimens of Rocks and Minerals collected from it—

Second Prize £2, and Certificate, for Paper on the Geology of West Cornwall, accompanied by Collection of Specimens of Granites, Stanley Major, School of Mines, Camborne.

Class 4. (a) Surveying Plans and Sections, accompanied with the Working and Traverse Notes of the Survey—

First Prize £3, and Certificate, G. L. Symons, School of Mines, Camborne.

Second Prize £2, and Certificate, A. E. Burnett, School of Mines, Camborne.

Third Prize £1, and Certificate, Stanley Mitchell, School of Mines, Camborne.

Fourth, Certificate, W. S. Howlett, School of Mines, Camborne

Fifth, Certificate, G. S. Scotis, School of Mines, Camborne.

JUDGES REPORT.—The Plans and Survey note books are very creditably executed, the work showing a distinct advance upon that of last year. Some of the note books specially deserve mention, viz., those of the winners of the 1st and 2nd prizes,

## Class 4. (b) Mechanical Drawings:—

First Prize £1, and Certificate, Isometric Projection of Shaft Timbering, C. Pengilly, School of Mines, Camborne.

Second Prize 10s., Drawing of Triple Expansion Engine, Edward K. Andrew, Falmouth.

Third Prize 7/6, Irving Charleston, Roskear Boys' School, Camborne.

Fourth Prize 5/-, Thomas Cock, Roskear Boys' School, Camborne.

JUDGE'S REPORT.—Roskear School boys have done well, and the School is recognised by a Certificate of Merit.

The following Classes are open to Children attending any Public or Private School in the County of Cornwall:—

## Class 5. (d)—Needlework and Knitting—

First Prize 10/-, Mabel Cavill and Violet Brown, Camisole, Trevethan Girls' School, Falmouth.

Second Prize 7/6, Dulcie Bowie, Dress, Clare Terrace Girls' School, Falmouth.

Third Prize 5/-, Phyllis Painter, Blouse, Clare Terrace Girls' School, Falmouth.

Special Prize of 2/6, Lily Roberts, Trevethan Girls' School, Falmouth.

Highly Commended, Kathleen Whitburn, Elsie Scott, Mary Tarrant.

## Raffia Work—

First Prize 10/-, Roskear Girls' School, Covered Basket.

Second Prize 7/6, Roskear Girls' School, Open Basket.

Third Prize 5/-, Clare Terrace School, Falmouth, Covered Basket.

Highly Commended, Jack Howard, Trevethan Infants, Falmouth.

## Class 5. (c) Drawing from Nature—

5/-, Francis Baker, St. Mary's School, Falmouth

2/6, James Harriſ, St. Mary's School, Falmouth.

2/6, Louis Bull, St. Mary's School, Falmouth.

## Class 6. (a) Preservation of Fruit or Vegetables—

First Prize 10/-, Raspberry Jam, Falmouth Domestic Centre.  
Second Prize 7/6, Bottled Gooseberries, Falmouth Domestic Centre.

Third Prize, 5/-, Gooseberry Jelly, Falmouth Domestic Centre.

## Class 6. (b) Cookery—

First Prize 10/-, Bread, Falmouth Domestic Centre.  
Second Prize, 7/6, Saffron Cake, Bodmin Domestic Centre.  
Third Prize 5/-, Pasty, Penzance Domestic Centre.

## Class 7. (a) Collection of Wild Flowers—

7/6, Budock Church of England.

## Class 8. Passe Partout Pictures—

2/6 each, George Angel, Cyril Morrison, Reginald Butler, and  
Asa Garfitt, Falmouth Church of England Boys'.

## Hammocks and Network—

30/- for 7 Exhibits, Newquay Council School.

## Pressed Seaweeds—

7/6, Laura Dunstone.

5/-, Sylvia Bishop, Gwennie Grey and Minnie Hopkins,  
Trevethan Girls' School.

# The Metallic Minerals of Cornwall.

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*Prize Essay at the Summer Meeting, 1921.*

*By J. V. Newton.*

Cornwall is the most highly mineralised area known in the world, and practically every economic mineral has been found in the County.

Mining for many centuries has been one of the chief industries of Cornwall, and has been the source of a very considerable revenue and found employment for a large proportion of the inhabitants.

It is generally accepted that the Phœnicians first came to Cornwall for tin at least 3,000 years ago, and were followed by the Romans.

Many interesting remains thought to be of the Phœnician and Roman have from time to time been found, and ingots of tin of peculiar shape for transportation on mule-back can be seen at the Truro Museum, a few years ago some cakes of metallic tin of high quality considered to be Roman were found in East Cornwall, a specimen of same is included in the collection.

Tin was undoubtedly the first mineral mined, and for centuries Cornwall was the chief source of this in the Eastern civilization, and after the fall of Carthage, the tin trade passed into the hands of the Romans.

The first tin deposits worked were undoubtedly of alluvial nature and were discovered in the various valleys, and large quantities of tin were obtained chiefly from the Goss Moors, Pentuan, Carnon, Wendren and many other localities that are now forgotten.

About 1700 it is reported that the Carnon Valley was worked right to the Restronguet Creek, and found employment for hundreds of people.

It is also interesting that whenever gold has been found in the County it has been associated with alluvial tin, and rills and nuggets of gold up to 2 and 3 ounces in weight have been in the Carnon Works.

When these were exhausted lode-mining at comparative shallow depths was resorted to, but the difficulty of keeping the workings free from water prevented any great development until the first pumping engine was introduced by Newcomen about 200 years ago. This engine was considerably improved, or in reality replaced, by the new engine invented by James Watt in the latter part of the eighteenth century, which allowed the mines to be profitably worked to a much greater depth than was ever before possible. The tin lodes run right through the County in an easterly and westerly direction and have been found to be productive only in the Metamorphic Rocks such as Granite and Elvan, and more particularly in the former, although some very rich specimens have been found in the Elvan, one of which was found at Parbola Mine may be seen in my exhibit.

Tin has been found in practically every part of the County from the Tamar to the Land's End, and in the early part of the nineteenth century there were over 400 mines working, many of these, however, were of a very shallow nature, and the number dropped in 1874 to about 200, whilst in 1882 this number was reduced to a 100.

**COPPER.**—Copper mining is of much later origin. Early in the 17th century copper, which had previously been obtained from Anglesea, began to be extracted from the Cornish lodes. These are usually found in the slate strata overlying the granites.

The various ores of copper are native copper, the oxides, carbonates, arseniates and sulphides, all of which have been found in the Cornish mines.



Most of the copper lodes as they passed into granite deposits became changed to tin bearing lodes in Dolcoath, Carn Brea, West Seton, and the other Camborne mines. In a number of instances, however, the lodes were not continued for tin, but the mines closed down when the copper became exhausted.

The Liskeard, Perranporth and Gwennap districts were particularly rich in copper and large profits have been made, one instance in Wheal Virgin, one of the Gwennap mines, £15,000 profit was made in five weeks' working in 1757. The first sales of which any record exists was in 1726, when 2.216 tons of copper was sold, in 1856 the amount raised had increased to 206,177 tons.

From 1726 to 1855 the copper obtained from Cornwall and Devon realised over £50,000,000.

LEAD has been found as carbonate, phosphate, sulphate, arsenate and sulphide (galena), the latter ore being the most important, from which source nearly all the lead has been obtained.

This mineral has been met with at comparatively shallow depths in most of the mines, and very rich deposits were found at Chiverton, Herodsfoot and Wheal Mary Ann Mines.

Silver is always associated with lead in galena, and it has often paid to extract this metal when smelting the ore.

From 1846 to 1865 nearly 95,000 tons of lead was obtained from Cornwall, this large amount has been gradually decreasing and none whatever has been returned for the last few years.

SILVER.—Besides the association of silver and galena it has been found native, and in the form of chloride and sulphide in various localities, native silver, and rich sulphide of silver have been found at Wheal Mexico and Great Retallack Mines, Perranporth.

Silver chloride occurred at North Dolcoath Mines, near

Camborne, and early in the 19th century fair amounts were found at Dolcoath, Carn Brea, Ludcott, and other mines.

**ZINC.**—This mineral has been plentifully found in the form of blende, generally associated with galena in many of the mines, particularly in the Perranporth and Chiverton districts.

**IRON** is widely distributed throughout the County in the form of sulphide (mundic), arsenical pyrites and oxides, hematite and limonite, but has not been worked with financial success.

The Perran iron lode at Perranporth is the largest and most remarkable lode in the County and consists chiefly of a low grade hematite and carbonate of iron, associated with manganese, and in some parts it is recorded that it contains several ounces of silver to the ton. This lode has a width of 120 feet.

**ARSENIC** is obtained by roasting the tin and other complex ores containing arsenical pyrites (mispickel), and has been a source of increased revenue to many of the mines.

**TUNGSTEN.**—Is found in wolfram and scheelite from East Pool, Carn Brea and South Crofty Mines.

**BISMUTH.**—In the native state and as sulphide (Bismuthine has been found at East Pool, St. Ives Consols and the St. Just Mines.

**URANIUM.**—Occurs chiefly as the oxide (pitchblende), and most important localities being, Trenwith Mines, St. Ives, Wheal Owles Mine, St. Just and South Terras, Grampound Road.

**MANGANESE, NICKEL & COBALT** minerals have also been found in many of our mines, but have not been of any commercial importance.

From the highly mineralised character of the County, the possibilities are great, as it can hardly be supposed that all the mineral wealth has been exhausted or even discovered,

and although mining at the present time has been practically stopped, it would probably pay to start work again in some of the shallow copper mines closed many years ago rather than continue the deep mines which are apparently worked out.

# The Renaissance of Merry England.\*

Presidential Address.      September, 1920.      By Henry Jenner, M.A., F.S.A.

My former addresses as President of this Society have been concerned with the past—the history and antiquities of Cornwall. They have also, I fear, been rather too long. This time I propose to make my address as short as possible and to talk rather of the future. For want of a better title I have called it “The Renaissance of Merry England,” counting Cornwall, for this occasion only, as if it were part of England.

Last week I read in the papers some very sensible remarks made at the Congress of Librarians at Norwich by Mr. Herbert Lewis, M.P. He began by declining to discuss whether Labour was fit to govern or not, but he did insist that it was necessary that the electors, whose numbers had recently been more than doubled, should have contact with books to enable them to form sound and enlightened opinions on the problems confronting them. He then put in a very good plea for the development of rural libraries, urging that such institutions would do much to allay the unrest that was driving young people into the already overcrowded towns, and to mitigate the dulness of country life, especially during the winter months. He was convinced that nothing would do more to secure what was wanted than this same development of rural libraries.

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\*This address is printed nearly two years after it was delivered, and is therefore perhaps somewhat out of date. Considerable developments have since taken place in some of the things suggested in it, notably in folk-dancing and in the St. Ives Old Cornwall Society, with good effect on the mutual temper of classes.—H.J.

I am inclined to agree with a good deal that Mr. Lewis said. I, too, shall not discuss whether Labour is fit to govern. I have my own opinion on that point, but this is not a political society, and I am not a member of Parliament. But fit or otherwise, there is very little doubt that Labour is likely to do a good deal of governing in future, either directly by a Labour government or indirectly by its influence on vote-catching politicians. And there is also very little doubt that at the present time Labour is in a very poor temper.\* I need not go into the reasons for this, but there it is, and when the different classes are in a bad temper with each other, no good can come of it. Mr. Lewis's panacea seems to be rural libraries, and no doubt the reading of books, if you read the right ones, will tend to a better understanding of each other, which goes a long way towards a better temper. Half at least of the quarrels whether between individuals or classes are due to not understanding each other. But I do not think Mr. Lewis's programme fills the whole bill. What we really want in this time of reconstruction is the reconstruction of "Merry England," the Merry England in which all classes joined together in common amusements and pastimes, and were all friends together. This may seem at present an impossible ideal, and it may be that we shall never get back to the mediæval state of things in that respect, for reasons into which I shall not enter, for they would involve religious controversy, but it is not so impossible as it looks, and all manner of little things may be done to help it.

There are some people who doubt whether England ever was merry, even in the light-hearted Middle Ages, which, they think, must have been rather a horrid time to live in. Indeed, John Froissart, writing in the latter part of the 14th century, gives it as his opinion in an often-quoted expression that the

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\*This was written before the closing down of Cornish mines and the extraordinary display of patience, good temper and orderliness under the most trying circumstances by the miners.

English took their pleasures "moult tristement," very gloomily. Perhaps they did as compared with the French, but yet mediæval village life must have been a very jolly life at its best. To take one aspect of it, the round of church festivals, with their accompaniment of folk-songs, folk-dances, village dramas and the rest, was a very real thing to the people of those days, and though our history-books concern themselves chiefly with wars, and so give a general impression that people were always fighting, there was really plenty of peace and security of life and property, far more so in England than in other countries. And the amusements were neither vulgar nor immoral, and all classes joined in them alike. Those who played in the same games and fought side by side in the same battles were not likely to have much class-hatred.

The Reformation hit "Merry England" rather hard by limiting the number of holidays, which perhaps had been rather overdone. Henry VIII., even before his quarrel with the Pope, had tried for utilitarian reasons to discourage excessive sports, and to encourage the practice of archery instead on festivals and summer evenings, but that was a part of his wise plan of putting the kingdom into an efficient state of defence, the same plan which called into existence the many coast castles like St. Mawes and Pendennis. But from all accounts England was still Merry England well through the reign of Elizabeth, until the rise of Puritanism persuaded those people who really wanted to be good that no amusement was quite right, even though it might not be exactly wicked. The attitude of Puritanism was like that of the lady in Du Maurier's picture in the "Punch" of years ago, who tells her little girl to "go into the next room and see what baby's doing, and tell him he mustn't." The great delight of the Puritan was to see what someone else was doing and "tell him he mustn't." It was his method of "compounding for sins he was inclined to"—I need not finish the



quotation. James I. and Charles I. tried hard to stem the tide by issuing that instructive document whose official title is "The King's Majesties' Declaration to His Subjects, concerning lawful Sports to be used," but which is better known as "The King's Book of Sports." They failed, and the issuing of that Declaration was a very strong factor in the movement which eventually cost the latter his crown and life. Of course, the great grievance was that the Declaration gave permission for the sports to be used on Sundays, which is a question into which I shall not enter, but the Puritans were not pleased with sports on any days, and their action, as the Kings express it, "in place thereof sets up filthy tipplings and drunkennesse and breeds a number of idle and discontented speeches in their ale-houses." And this was very much what it came to when the Great Rebellion and the Commonwealth had worked their will on once Merry England. After the Restoration there was a reaction of a sort, but not of a very desirable sort, and, as the better educated stood more and more aloof from them, the sports of the people tended to become low, vulgar and often cruel. There was at that time no chance of restoring the old customs. "The King's Majesties' Declaration" enumerates the sports which had survived down to the early 17th century. It says, "Our pleasure is that after the end of Divine Service Our good people be not disturbed, letted or discouraged from any lawful recreation, such as dauncing, either men or women, Archery for men, leaping, vaulting, or other such harmlesse Recreation, nor from having of May games, Whitson Ales and Morris-dances and the setting up of Maypoles and other sports therewith used . . . and that women shall have leave to carry rushes to the Church for the decoring of it, according to their old custome. But with all we doe here account still as prohibited all unlawful games to bee used upon Sundayes onely, as Beare and Bull baitings, Interludes and at all times in the meaner sort of people by law prohibited, Bowling."

"Beare and Bull baitings" are not desirable sports on any days of the week. "Interludes," of course, mean stage-plays, and the mention of them shows that these village dramas, probably a survival of the old miracle plays, still went on. Indeed, the date of the latest Cornish drama, William Jordan's "Creation" play, is 1611, only seven years before the first publication of the King's Declaration in 1618. Why "the meaner sort of people" should be prohibited from that excellent game, bowls, I do not know. It seems rather an arbitrary distinction. But the continuity of tradition had been broken by the Puritan revolution, and the Restoration was not a time for antiquarian revivals. So the distinction of classes in amusements became more and more marked, and the German class-snobbery, which came in with the Hanoverian dynasty, and the long period of Whig ascendancy, made things worse. I do not mean that class distinctions are all snobbish—far from it—but there is a wrong way as well as a right way of using them, and the 18th century hit upon the wrong one. The situation was to some extent saved by the development during that century of the finest and most perfect game that man has ever invented, a game at which all classes can play together with perfect equality, good humour and mutual respect, the noble game of cricket. But after all, only a limited number of people can play cricket together at the same time, so its effects were somewhat limited. Still, one wonders what England would have been like without it. And now there are those who say that it is going out, killed by professionalism and too high a standard of excellence for the ordinary man. But I hope that this decline of cricket, of which the papers have recently been talking, is not more than a temporary thing, due to the war, and that we shall never lose this priceless heritage which we share with no other nation.

Unlike the Restoration period, the present is a time at which what may be called antiquarian revivals of old manners

and customs are possible, though not necessarily in their exact old form. There is a considerable movement in this direction already. The collection and revival of folk-songs, folk-dances and folk-dramas goes on apace. Many of you, no doubt, were present at that remarkable display of folk-dancing at Penzance in the early part of this summer,\* and were able to see what can be done in a very few years in the way of that particular revival in one county, especially when that county has so energetic and capable an organiser of such things as Cornwall is lucky enough to have. We all know too, what has been done for music, folk or otherwise, in Cornwall by the same organiser for a good many years. There exists, too, a "Village Drama Society," with members all over England, which was founded in January, 1919, and is chiefly run by Miss Mary Kelly, of Kelly, near Lifton in Devon. Its object is to assist the people of country villages to produce plays for themselves. Its first Report speaks of the drama as a means of developing "the artistic sense that has at present to lie sleeping in the minds of country folk," and emphasises its educational value for children and its social value "in that the rehearsals and preparations for a play serve to bring all classes together in a common interest that is quite outside their work." One of our members, Mr. R. Morton Nance, whose plays in the Cornish dialect of English are well known to some of us, is down in the list of "trainers" of this Society, so those of you who are interested can easily hear more of it. The idea is not so much to revive old plays as to promote the writing and performance of new ones, which shall be stage-managed and acted, and even in some cases written by the village people themselves. Similar work is being done at Glastonbury by Miss Buckton, the author of that well known and striking play, "Eagerheart," though not, I think, in connection with the Village Drama

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\*In July, 1920. Since then much more developed festivals have been held at St. Austell in 1921 and at Penzance and Liskeard in 1922.

Society. This society has a list of 18 religious, 21 secular and 19 children's plays, and can supply special costumes for a great many of them. It is undoubtedly worth supporting. In Cornwall there are two sports which might well be revived more generally, hurling and wrestling. These were distinctively Cornish sports, for though of course wrestling is common all over the world, Cornwall has its own particular form of it. Hurling is exclusively Cornish, though the same name is used for a sort of hockey in Ireland, and there is a game called "horella," which I take to be the same word, found in Brittany. It was once played all over Cornwall, but dwindled down to one annual match of town against country on Shrove Tuesday in my native parish, St. Columb Major, and an annual match on Feast Monday at St. Ives, though I believe it has been recently revived at Newquay. It is quite a good game, though rather a rough one. As for wrestling, it has always been kept up, more or less, but for a time fell rather into disrepute. Now, I think, it is in a fair way to become popular again.

But all these Merry England revivals have been as yet, compared with the population, on a very small scale. What is wanted is to make them general, in every parish in the kingdom, and to interest the people in them, so that they may organise and work them themselves. By which I do not mean that they should be left entirely to the so-called "working classes," and that the upper and middle classes should stand by and look on or avoid them altogether. In spite of the common cant of Labour leaders, the "People" and the "Folk" do not consist entirely of the proletariat. We have as much right to be part of the People as they have, and the same right to a share in folk-songs, folk-dramas and folk-dances as they have, and we should claim our right and our share of the things worth having, our right to enjoy them too. Laudable and fairly successful attempts to enliven country life were made all over the country in the middle of

last century, largely by clergy who had come under the influence of what is known as the "Oxford Movement." But times have changed since then. The time has gone by for the things of which I speak to be run by the squire and the parson and their families to amuse "the poor," as they used to be called, and keep them out of mischief; the said organisers being secretly in their heart of hearts bored by the whole thing. That method had its uses in the old days of fifty or sixty years ago, as I, who am the son of a country parson, remember well. In those days all classes were friends together, and we used to get up concerts, penny readings, play-acting, cricket matches, and other entertainments, which were, I think, very well appreciated. But it was ourselves, the vicarage people—there was no squire—who had to "boss" the shows, and "the poor" had to do as they were told. They did not resent it in the least, but now the old order has changed and if any form of Merry England is to be restored "the People" must run it themselves, it being thoroughly understood that the labouring classes have no exclusive right to the title.

You may ask why we should seek to restore old ways of amusement—why not strike out a new line? This is a fair question and brings in another matter. During most of last month I was in North Italy, and I think that country is now a very sad sight. I have known it, on and off, fairly well for more than forty years, and have been there many times, and the changes during those years have been very marked. Once it was a beautiful land, full of delightful ancient and mediæval antiquities. Now what one remembers as lovely valleys are full of factories and huge smoking chimneys, and, if the present temper of "Labour" there goes on, short work will be made of antiquities, for the great idea of Italian labour leaders is to break entirely with the past and to destroy all evidences of it. For example, for some years there has actually been a constant danger that the town



council of Venice will fill up the canals and put tramways along them! And formerly the Italian peasantry were delightful people—very poor no doubt, but cheery, pleasant and good humoured. Now one sees on all sides gloomy, sulky faces, and bitter discontent—and they are as poor as ever. And it is largely the break with the past that has spoilt them, the desire to be up-to-date and modern. No doubt they make useful things in the factories, but at least they might put them in places where there is no beautiful scenery to spoil, and as for the antiquities, no doubt we must be prepared to lose a certain amount, but let that amount be as small as possible and without a set and deliberate plan of sheer cantankerousness.

Italy is a warning that a break with the past and the destruction of a respect for beauty and antiquity does not make a nation any the happier, but very much the reverse. The revival of old-world amusements is only a part of a very desirable stimulation of interest in the past, which may be encouraged also in other ways. I need not go into the details of the excellent scheme for the collection of rural lore by means of elementary and other schools, which the Cornwall Education Committee, following the example of the Welsh Education Department, has adopted recently. You heard a good deal about it at the Annual Meeting, when a most encouraging move in connection with it was made by Sir Edward Nicholl. Also you may read all the details in a pamphlet which is to be sent round to school teachers by the Education Committee. Cornwall is very specially suitable for such a scheme, and the work need not be confined exclusively to schools. A good example of how it may be taken up has been given this year at St. Ives. In that town a Society called "The St. Ives Old Cornwall Society" has been formed, chiefly organised by Mr. Morton Nance, for studying, collecting and preserving all manner of old Cornish things of every description; language, dialect, manners and



customs, folk-lore, legends and the like. It has been working through this summer and has already been very successful. They have actually got up, among other things, a class of some size for the study of the Cornish language. Now, what St. Ives can do other towns can do. Why not have Old Cornwall Societies all over the county?—a Camborne Old Cornwall Society, a Penzance Old Cornwall Society, a New-quay Old Cornwall Society, and the rest. Let the subscription be as small as possible, so as to rope in all sorts of people. The expenses need not be great, and such societies, being run on different lines, will not clash with the old existing societies such as the Royal Institution and Polytechnic. They might indeed be worked on lines similar to those of those excellent things, the Women's Institutes, with perhaps eventually a similar collective organisation. I am sure that the St. Ives Society will be glad to give any proposed Old Cornwall Society the benefit of its experience. There is no need to argue for their educational value, but their social value is also quite as great, especially in the present conditions.

It is well known that there are those, unhappily, who make it their business to foment class hatred and discontent, who prate all manner of "tommy rot" about "divine discontent," as if it could ever be a desirable thing to make people unhappy. Some, no doubt, are genuine, if wrong headed, idealists, but most of them are something else, and they are all tools, consciously or otherwise, of those mischievous enemies of civilisation, the Bolsheviks. I do not want to go into controversy about his particular fad, but I have always thought that the notorious Mr. Johnson was really called "Pussyfoot" because he is the "cat's-paw" of the Bolsheviks. If we want to preserve our present civilisation we must restore Merry England. It will be said that all these things are too small matters to have any particular effect, that it is imitating Mrs. Partington and trying to keep out the Atlantic with a broom. Not at all. There is a wise north-country

proverb. "Many a little makes a mickle," and they are all part of that valuable gospel of play. "Work while you work and play while you play, but don't mix them." At present folk-songs, folk-dances, village dramas, and the study of old world matters generally have been confined to a very small number of enthusiasts as compared with the large population. There is no reason why these ideas should not be spread abroad into every country parish in the kingdom, to supplement Mr. Herbert Lewis's excellent suggestion of rural libraries and to supplement, not to compete with, another excellent institution, which I believe is coming in more rapidly, the village kinematographs. These last, a considerable factor in any future restoration of merry England, are worthy of all support, though they are modern enough in all conscience. I am quite an impartial witness in their favour, because they do not amuse me personally and I seldom go to them. I have heard that our modern Puritans have had their say about them, and that as soon as they found that they really were a source of amusement to the people, they set about finding reasons for hampering them with inspections, censorings, and other annoyances, and have pointed out carefully how undesirable they are. But still they go on, and those of us who look for the restoration of "Merry England" may well approve of them, for they do cause a great deal of harmless enjoyment, at a very small cost, which is what we are aiming at.

And in all these endeavours to enliven country life, let us make a beginning with our own country—Cornwall. My object in this address has been to call attention to—to advertise, if you like—certain desirable movements which have made a beginning already and appear to me to have a useful tendency in the present condition of affairs. If by them we can bring the various classes of the community together and make them friends again, so much the better.

# The Preservation of Ancient Monuments.

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Presidential Address at the Summer Meeting of the Royal Cornwall Polytechnic Society, 6th July, 1921.

*By Henry Jenner, M.A., F.S.A.*

This year my address is on a practical rather than an historical subject, and it refers to a matter in which, if we choose to take a little trouble, we can all make ourselves useful—the preservation of ancient and especially of prehistoric monuments. A great opportunity has been made by the proposed action of the Committee of the Cornwall County Council for the Preservation of Ancient Monuments, acting in concert with and under the advice of the Chief Inspector of Ancient Monuments for England, Wales and Scotland, and of his Department of the Office of Works. It is an opportunity not to be lost.

Cornwall is probably richer in prehistoric monuments than any district of the same size in Great Britain, or perhaps even in the world. I have collected from the by no means exhaustive lists in the Victoria County History and a schedule made in 1913 by the aforesaid County Council Committee the following statistics:

Earthworks, whether cliff-castles, hill-forts, single or double earthworks of other sorts, 207. This is by no means a complete number.

Stones circles, 14.

Menhirion or Longstones, 21. There are really many more of these, which have been supposed to be only rubbing-posts for cattle, or have been built into hedges. Quoits or

Cromlechs, 8. This again is an under-statement.

Altees Couvertes or underground structures, 11.

Huts and Hut Circles or collections of them, 16. There are several of these that have been noted since.

Thus it will be seen that without counting barrows, of which there are some hundreds of various shapes, sizes and ages, and of which a complete list yet remains to be made, there are in Cornwall at least 277 recognized prehistoric monuments of sufficient importance to be noted. Authentic history in Cornwall begins rather late, and I think we may add to these as quasi-prehistoric such undoubtedly Christian monuments as the 83 holy wells, the 43 inscribed stones and something approaching to 400 crosses, as well as about 15 ruined chapels, which certainly or possibly go back to the Celtic period of Cornish Christianity. These, added to the really prehistoric monuments already enumerated, bring the number up to at least 800, so that, counting barrows and only recently recognised earthworks and menhirion, I think we may safely say that the 1,356 square-miles of which Cornwall consists contain well over a thousand prehistoric or quasi-prehistoric monuments. Can any other district of the size boast of such riches?

Until the present time very little has been systematically done for the preservation of these treasures, so little indeed that many have been destroyed within living memory. I remember a quite good little cromlech which stood half a century ago at a small farm, called after it "Quoit," on the slopes of Castle-an-Dinas, in St. Columb. When I saw it in 1867 it was a pig's crow, and when I was staying at St. Columb later in 1871 I heard that it had just been broken up. In those days only a few eccentric people called "antiquaries" cared twopence about such things. Occasionally when some more noted object of antiquity was destroyed or threatened local antiquaries or even the Society of Antiquaries itself would fire off protests or votes of censure, but nobody minded

them, and practical people could not see why any of us should bother about a lot of old stones. It is true that even then enlightened landowners were beginning to see that there was some interest attaching to such things, but they were few, and the St. Columb Quoit was by no means the only ancient monument which perished in those Philistine days.

There have always been antiquaries in Cornwall, more or less, since antiquarianism began, and these have constantly called attention to our ancient monuments. Some, indeed, like the older Borlase, Cotton, Cyrus Redding, the Lysons, C. S. Gilbert, Davies Gilbert, Edmonds, Blight, Jago., and others in the eighteenth century and the first seventy years of the nineteenth, did excellent service in recording and in some cases in making plans, measurements and drawings of them. The Cornish Societies, the Royal Institution of Cornwall, the Penzance Natural History and Antiquarian Society and our own Society, did good work from time to time, but I think that as far as Cornwall is concerned the improvement in public opinion on such matters was very largely due to my old friend William Copeland Borlase. He began young, for his first important work "*Nænia Cornubiæ*" was published in 1872, when he was only 24 years of age, and he had made his debut in the *Journal of the Royal Institution* in 1867, when he was only 19. Not only was he a first-class antiquary, but he had immense power of work and a very considerable power of speech, and could make himself listened to. During the seventies of last century, until in an evil hour in 1880 he was persuaded to take up politics and go into Parliament—such a waste of a good man!—he was all over the place in Cornwall, excavating, planning, measuring and recording ancient monuments, and, what was quite as important, showing owners and occupiers that these things were worth preserving. And his short career in Parliament was not wholly wasted, for he was one of those who promoted the first rather mild Bill which became the Ancient Monu-



ments Protection Act of 1882. This Act and its successors of 1900 and 1910 were not very effective measures, though they were better than nothing. At the least they called public attention to the existence and interest of monuments of past ages, and the fact that such Acts should be passed by Parliament at all showed a great advance in public opinion. As some one, I think it was the usual Dr. Johnson, said of the dancing dogs, "the wonder was not that they should do it well, but that they should do it at all." In 1913, however, an Act was passed which has put the whole matter on a totally different footing. Its title is an unfortunate one, but you can't have everything or expect a sense of humour from Parliament. The "Ancient Monuments Consolidation and Amendment Act" sounds ambiguous. It is all right to consolidate an ancient monument which is in danger of falling down—or as when they put up the Stonehenge trilithon which collapsed some years ago—but I don't like the idea of "amending" one. It reminds one of what happened to a certain stone circle in the extreme West, which was restored and corrected according to the ideas of a local antiquary of sorts, whose zeal was greater than his knowledge. He "amended" the number of stones from 23 to the mystical 19 of the Metonic lunar cycle. But in spite of the title the Act is a good one.

The Act gives very wide powers to the Commissioners of Works and to various local authorities to acquire the possession or guardianship of any ancient monument other than an ecclesiastical building in use as such or an occupied dwelling-house, and defines "ancient monuments" as any monuments or things which are of a similar character to those specified in the schedule of the Ancient Monuments Protection Act of 1882, or in the opinion of the Commissioners of Works, advised by Ancient Monuments Boards appointed by the Act, are of such historic, architectural, traditional, artistic or archæological interest as to be worth preserving. The Commissioners are empowered, subject to certain provisions regarding notice, etc., to make "Preservation Orders" in the



case of any monuments that are in danger of destruction, removal or damage from neglect or injudicious treatment, and to make lists of monuments of national importance, and to take proceedings against those who damage them. Owners are protected sufficiently against arbitrary or vexatious orders. There are a considerable number of provisions in the Act, a detailed account of which may be found in the Journal of the Royal Institution of Cornwall for 1914. What it comes to is that it can be made illegal under considerable penalties for anyone, even the owners, to damage or destroy any ancient monuments, and the Government and the local authorities can spend money on their protection and upkeep. I say advisedly that it *can* be made illegal, not that it *is* made illegal, and it is to be hoped that the drastic powers given by the Act, for reasons which I shall come to presently, will be used with as much tact as possible and will be made as little vexatious as is consistent with the preservation of the objects.

Just before this Act was passed, but probably in consequence of the Bill having been brought in, the Cornwall County Council appointed a Committee of their own number, with power to co-opt outside persons, for the preservation of ancient monuments. This was in the autumn of 1912. This Committee as finally constituted, included fifteen members of the Royal Institution of Cornwall and nine of the Polytechnic Society, seven being members of both. It included the President, Hon. Secretary, Assistant Secretary, and past Hon. Secretary of the Royal Institution, the Secretary of the Polytechnic, the President and Hon. Secretary of the Penzance Natural History and Antiquarian Society, as well as the three local secretaries for Cornwall of the Society of Antiquaries. It will be seen therefore that the Societies which occupy themselves with antiquities were very fully represented, 21 out of the 27 members of the Committee being members of one or other of these societies, and some of these being members of two or more. At the

meeting held on 23rd July, 1913, I was elected chairman. The Committee did quite a lot of work. Several meetings were held in 1913 and 1914 and lists of ancient monuments were drawn up. It was decided that a systematic inspection and report on the condition of ancient monuments in Cornwall should be made by Mr. Thurstan Peter, Mr. J. B. Cornish and myself, and the County Council voted a sum of money towards our out-of-pocket expenses. This was to have been made in August and September of 1914, but, as it turned out, those months were impossible, and the Committee was in abeyance during the war. It had got into touch with the Ancient Monuments Department of the Office of Works, but that office was feeling its way and we could not then persuade it to schedule for preservation the very long list of antiquities which we sent in. Still, we had made a beginning and I think I am right in saying that Cornwall was the first county to form such a Committee. When after the war the County Council was dissolved, the Committee lapsed with it. Eventually the new County Council, owing greatly, I think, to the very useful interest taken in the matter by the Chairman, Mr. William Hawk, appointed a new Committee, and made a grant of £100 for expenses. This in its composition is very similar to the first Committee, and if there is any difference it is that the learned societies and antiquaries of Cornwall are even more fully represented. The Committee held a meeting on June 8th, 1920, when the chief business done was the re-appointment of the inspecting sub-committee, the place of the late Mr. Thurstan Peter, whose death has been so great a loss to Cornish archaeology, being taken by Mr. Charles Henderson. As much of the proposed inspection as possible was to be made during the long vacation of 1920. The result was that during the summer of 1920 Mr. Henderson drew up schedules of the ancient monuments in the four western hundreds of Penwith, Kerrier, Pydar and Powder, with notes on their present condition. Later on Mr. C. R. Peers, the Chief Inspector of Ancient Monuments for

England, Wales and Scotland, whom I had kept informed on what the Committee was doing, came to see me to discuss the application to Cornwall of a scheme proposed by the Ancient Monuments Boards and the Office of Works for the protection of all the prehistoric monuments of Great Britain. Mr. Peers agreed to write to me a letter containing a full account of the scheme, which I could lay before the Committee. This he did, and a meeting was held on January 5th, 1921, at which his letter was read and considered. The scheme, as abstracted for the minutes of that meeting is as follows: "that it is the intention of the Boards to schedule for protection under the Act of 1913 all the prehistoric monuments of Great Britain, and that a scheme has been drawn up to institute a system of district correspondents throughout the Kingdom on a county basis, the details to be settled in consultation with the local archæological societies and county authorities, each county being divided into districts with a correspondent in each, who should report to a chief correspondent, or several chief correspondents, for the county."

In answer to this letter it was decided that the districts for Cornwall should be the eleven education districts, and that the County Council Committee should be the "chief correspondent," the Chairman having power to act in cases of emergency. The correspondents appointed for the districts were as follows:—Penzance, Mr. J. B. Cornish; Redruth, Mr. G. Bray; Helston, Sir Courtenay Vyvyan; Falmouth, Mr. C. G. Hendersen and Mr. H. D. Acland; Truro, Mr. G. Penrose; St. Columb, Ingeborg Lady Molesworth St. Aubyn and Dr. W. J. Stephens; St. Austell, the Rev. Canon Mills, Bodmin, Sir Arthur May (who unluckily finds it impossible to act, so someone else will have to be appointed); Liskeard, Mr. A. de Castro Glubb; Launceston, Mr. Otho Peter; Saltash, Mr. P. E. B. Porter.

Another meeting was held on May 12th, when schedules

for the four Western hundreds, arranged by districts from his former lists by Mr. Charles Henderson, were put in and were ordered to be sent to the district correspondents to aid them in their work. That work has already begun, and I think we may hope for great results from it.

Now the place at which we all come in, whether members of the Committee or not, is this. It is obviously impossible for each correspondent adequately to look after all the monuments in his district all by himself. It has been suggested that he should take to himself a number of volunteer assistants, who should each take a small number of antiquities or a small area under his special care and report to the correspondent in case of any threatened damage. In some cases a single parish might be taken, or in the case of very large parishes, such as Alternun, St. Neot, Wendron, St. Columb and a few others, which are several miles across, there might be more than one assistant to a parish. Parsons and schoolmasters have been suggested as being likely people to be able and willing to make themselves useful in this way, but it need not be confined to those classes. Nor need the workers be expert antiquaries. It requires very little antiquarian knowledge to see whether any damage is being done or threatened, and any member of this Society is quite well qualified to take a little district and look after it. A visit every now and then to the antiquities in it, and a little keeping in touch and on good terms with owners and occupiers of land is not very difficult. Do not be afraid of being called that dreadful thing, a "local busybody." There are conditions under which it is quite right to be a busybody, and this is one of them. The thing to do is to write to the "district correspondent" in whose division the parish or other area which you propose to take is situated, and offer to help him. I have got a list of the parishes in each district, so I can tell anyone which contains the area which he proposes to look after; but any of the schoolmasters can tell him

which it is. There is really a great opportunity of doing very good work in a systematic way. Prehistoric monuments require looking after in an organized manner more than any others. It may often happen that an earthwork or barrow which is to all appearance insignificant, so much so as to be hardly recognizable as such, may on careful examination turn out to be of first rate importance. As regards the actual protection of such objects no Act of Parliament with all its penalties and things can be effective unless it is backed by public opinion. Whatever powers the State may hold in reserve, unless public opinion is with it, people will find a way round the law somehow, and the monuments will not be preserved. Moral suasion is worth more than the law and it is to be hoped that there will be very few cases indeed in which moral suasion will not be effective. I believe that almost all the damage that has been done to ancient monuments has been done in genuine ignorance of there being any interest or value attachable to them. It is for us to dispel that ignorance. But in doing that we must use great tact, and must take the greatest care not to put up the backs of those who have the legal ownership of these objects. All decent and intelligent owners of ancient monuments recognize that whatever their legal rights may be, such things belong really to the nation or, one would rather say, to the world as a whole, not to the temporary owner on whose land they may happen to be. It is for us to persuade all owners to be decent and intelligent in this respect. And though we shall find the State Department very helpful and useful, and it will be wise of us to act in concert with it, nothing can be worse than the idea that the preservation of ancient monuments is a matter for the State alone. If the protection of Cornish antiquities, that rich inheritance of which we are rightly proud, is to be effective, it must be run by Cornishmen, and I think I am justified in saying that the Committee for the Preservation of Ancient Monuments will be glad of the help of all Cornish people, whether by active co-operation or moral support.

# Celtic Words in Cornish Dialect.

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## II.

*By R. MORTON NANCE.*

In resuming after three years my study of Cornish dialect words as a source for the restoration of words to the Cornish language, I need not put together another string of these survivals, for my glossary of them, corrected to date and pruned of just a hundred words, is to be printed with this paper.

I had already weeded out about 150 English dialect words admitted as Celtic by such authorities as Lhuyd, Borlase, Pryce, Williams, and especially Jago: I have now cut out words from English that were in use in Cornish, some even since the time of the Cettonian MS. vocabulary, words from English or French that are used in Welsh and Breton also, and all words that seem to have gone out of use before 1800. This last cut deprived my list of some very interesting words from 17th and 18th century sources, but there are still 450 words that seem quite unassailable as Celtic and as dialect.

The extraordinary thing is not, however, that there should be so many of these words, but that, even allowing for the many that have not yet been collected, these should be so few. When one remembers the comparatively short time that has passed since Cornish was freely spoken by many of the old folk, this becomes really astonishing; and one can well understand the imaginative stranger's belief that we are



only pretending to have forgotten our language and keep it all the time as a secret of our own.

It is very tantalizing, too, to realize, as one must after a little study of the facts, how narrowly we have missed several chances of adding to our Cornish vocabulary or even possibly of keeping the language alive. Had John Ray, for instance, been willing to learn from Dicon Angwin of St. Just and to disregard his lack of scholarship, he might have been the means of preserving the 17th century Cornish that, grammarian or not, Angwin clearly wrote and spoke. Had that other great man, Edward Lhuyd, trusted to unlearned but habitual Cornish speakers more than to amateur philologists like John Keigwin, his four months in Cornwall might have been spent to even better purpose. But more than this, as I hope to show, had Dr. Borlase, or Dr. Pryce, even, been willing to learn from those who had no Latin, it was probably not too late for either of them to have gathered in words and sentences the whole language in its latest phase. It maddens one to think of these learned, laborious Cornishmen, misprinting earlier collectors, misreading ancient manuscripts, jumbling their own few Celtic, or West Country English, words with an indiscriminate hurling together of Cornish, Welsh, Breton, and Irish from Lhuyd's *Archæologia Britannica*, compiling dictionaries, in fact, before learning the language and making cryptograms for Cornish students that take ten times as long to unravel as they did to write, while all the time the language itself was being spoken by the poor old "backjowster" bringing fish round to the back-door, or even by the bent old gardener, mowing the grass in front of the library window, from whom—alas!—it would be *infra ãig*. to learn.

Personally I believe that the unpleasant word "corrupt," or in his Welsh-Cornish *legryz*, used by Lhuyd of Cornish forms that in their natural growth had become more Cornish and less like Welsh, had a great deal to do with this apparent

mental snobbishness. Thomas Tonkin, in a letter to Gwavas written in 1736 (and borrowed by Pryce, with the rest of Tonkin's plumage, for his preface to the *Archæologia Cornu-Britannica*, 1790), uses this term "corrupted" of the language of the "illiterate ancient persons" of that date, although the worst that he can say of these is that "very few of those that speak the language" (or as Pryce alters it, "still pretend to jabber it") "can give any tolerable account of the orthography, much less of the etymology, or derivation of those words which they make use of, and are many times apt to jumble two or three words together, making but one of them all, *tho' they pronounced them rightly enough*"; not seeming to realise that the latter feature of their speech was the only important one, the dull stuff of orthography and etymology being for himself and his friends to supply as far as they could. \*

Again a great, though now a last, chance for Cornish came and went in 1793, when, fleeing from the guillotine, a young Breton came across from Brest to Penzance, and finding friends stayed there a year. When it is known that this was no other than Le Gonidec, who later made the great Breton dictionary, and must even then have been something of a Celtic scholar, one wonders how he could have failed to notice the language so like his own that lay, as it were, dying at his elbow, yet there is no sign that he preserved a word of it.

Most extraordinary of all, however, it seems, that Daines Barrington's famous visit to Dolly Pentreath, twenty-five

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\* This letter of Tonkin's, for plagiarizing which Pryce has been so severely handled, is actually an echo of a letter written to him by Gwavas in 1731 (Gw. MSS. f. 13.) Gwavas does not revile the old folk's ignorance, but says, "they knew not how to write it or rightly decide the words or sentences, yet gave the true pronounciation and accent of the word, as they would say, *merastadu*, etc." almost exactly as printed by Pryce. Much as we are indebted to the "Gwavas group" of Cornish students, it must be admitted that they fixed no orthography for themselves, and often failed to unravel Lhuyd's, and that of etymology, they could have taught these "ancient persons" little.

years before, and in the year of Dr. Borlase's death, should have ended in so little, for he at least had got away from the ink-pot, and reached the fountain-head of Cornish in one who as a child had known no other language. Dr. Wolcot, in his "Peter Pindar" rôle of professional wit, writes of this visit in a vein far less amusing to-day than it seemed then, saying that Barrington "committed her speeches to paper, not venturing to trust his memory with *so much treasure*. . . The journals were *enriched* with their dialogues; the old lady's picture was ordered to be taken by the most eminent artist and the honourable member to be publicly thanked for the *discovery* "

Even in shorthand it was hardly possible for Barrington to take notes while the old dame, to use his own words, "spoke in an angry voice for two or three minutes, and in a language which sounded very like Welsh" (a language of which he seems himself to have known as little as he did of Cornish), and he probably did as much as could fairly be asked of him in pointing out that Cornish was still there to be studied by those who had some Celtic knowledge. He seems, at all events, to have taken no notes whatever, and still worse, not one of our native Cornish men of education had the curiosity to follow up his clue. The word was passed, it seems, that Dolly was a vulgar old humbug, her character as fishy as her cowl, and Barrington a deservedly-gulled and intrusive stranger—and there it ended. When his turn to write comes round, Polwhele echoes "Peter Pindar," and refusing to believe that an old "fish-jowster" could possess any knowledge worthy the attention of men of culture, says off-hand that the writer of her epitaph knew more Cornish than ever she did herself, and, although he deserves our thanks for his "Provincial Glossary," like the rest, when he makes a "Cornish-English Vocabulary," he is content with "such a selection of words from Borlase and others" as he thinks "may amuse the reader." Davies Gilbert, while he accepts

Dolly, as being in his time sufficiently long dead, has to any still-existing remains of Cornish in 1826 the same superior downlook, indeed he goes a very great deal further, and after piously returning thanks in his introduction to *Mount Calvary* that the Cornish language was in his day no longer living, proceeds to butcher its remains in what have been pronounced by later editors to be perhaps the least accurate and most ignorantly translated texts ever published in any language. This verdict in Gilbert's case is certainly justified, for the translations used by him are Keigwin's, and for his own part he was not even capable of correcting the printers' errors in them; but someone, probably Hals, seems to have copied and translated bits of these plays even more badly, the person responsible for printing them being Pryce, who has not corrected the most obvious misprints in them, and apart from mining terms, evidently knew little more Cornish than Gilbert.

On the testimony of the humourists, then, supported by the silence of the men of learning, not only has Dolly gone down to history as a fraudulent old hag, but it has been generally supposed that Cornish as last spoken was, if not absolute gibberish, at least a broken-down dialect in which, much as in the Romany of modern gipsies, the form of the sentence and almost everything but the bare bones of nouns and verbs would have been English. A great help to this judgment has no doubt been Dolly's "portrait" as printed in the *Universal Magazine* and thence copied again and again. The capacity of the artist responsible for this may be gauged by his rendering of the emblems of her profession with which he has surrounded it—the "crab" and "lobster," the former with six legs, all told, and both minus "pincher-paws"; the "train-pitcher" given the elegant stem of a silver cream-jug, and the conger, pilchards, and cawal equally ill-observed. Contrast this low-browed, snouted, "comic valentine" of a "portrait" with the handsome, dignified, yet humorous old

face of Dolly in Opie's picture of her at St. Michael's Mount, a wonderful character study, in which not a wrinkle is forgotten, and you have a very fair basis of a re-estimation, not only of Dolly Pentreath, but of the Cornish of her contemporaries.

That Dolly, misjudged as she has been, was not quite ingenuous in one respect, I believe. She was no Celtic enthusiast, but just a poor old "backjowster" who found her world none too easy a place to struggle along in, and having made for herself a reputation as being, not merely (as apparently she was), the last person who had spoken Cornish before English, but also "the very last Cornish speaker," a reputation that brought a small but very welcome addition to her little income, as tips from "the quality," she was none too willing to allow that she had any rivals. William Bodener, however, whose "Letter in Cornish" (p. 81) was written, thanks again to Daines Barrington, in 1776, the year before Dolly's death, although a poor fisherman himself, was less jealous, and allows, in such a way that one sees his wish that they were more numerous, that there were then at least four or five of his townsfellows who spoke Cornish. He was then sixty-five years old and writes of the other Cornish speakers as being people of at least eighty, so that it seems fairly certain that he was the "very old man," living at Mousehole, who in 1790, when Pryce wrote the preface to his *Archæologia Cornu-Britannica*,\* was the only person then "capable of holding half-an-hour's conversation on common subjects in the Cornish tongue"; for Bodener lived until 1794, and was, if not as Pryce described him, "quite an illiterate man," at least a man from whom, to Pryce and his friends, it would be quite impossible to learn. After him,

\* The portion of this wherein this "very old man" is mentioned, is not, as Norris supposed (*Cor. Drama*, p. 471), borrowed from Tonkin, but represents Pryce's own small share in the work. Thus Bodener it was who remembered how being at Morlaix with a smuggling vessel he found himself able to understand much of the Breton there spoken, c. 1730.



Cornish clearly became a matter of isolated scraps; for the most that Lysons, writing twenty years after his death, can say is that "some old people are acquainted with many words of it, which they have learned from those of the last generation."

It has been lightly suggested that this letter was a "fake"—a practical joke upon the "dupe," Daines Barrington; but on enquiry it becomes clear that among the Cornish "wits" there was no-one capable of putting so much of the language together. It would have been quite beyond the powers of the dictionary-makers, for Borlase, even had he been able to write it, which is more than doubtful, was no longer living, and Pryce was, as his dictionary shows, scarcely capable of copying others' Cornish correctly, to say nothing of writing his own. The only other person to be considered is Tomson,† author of the doggerel epitaph in Cornish on Dolly Pentreath (p. 82), who being merely an engineer, and no "superior person," had indeed picked up a little Cornish, partly perhaps from manuscripts, but more one guesses from one or two of those "ancient persons" whose orthography and etymology were so lamentable. All credit to Tomson, who had the initiative to study the "corrupt" language on his own account, and would have known better than to claim to know more of it than old Dolly; yet it must be admitted that his Cornish, even in so short a specimen of it as he has given us, is defective in several particulars, and though written a little later than Bodener's letter, is considerably less idiomatic, and quite obviously a mere exercise. Besides this, of the six words common to both scraps of Cornish, none are spelt alike by the two writers. Hence we are driven to the conclusion that William Bodener *wrote his own letter!*

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† To his name ought perhaps to be added that of John Nanearrow, of Marazion, who was known to Barrington, but there is no reason to believe that he knew more than Tomson, or that he ever attempted to write Cornish, neither, being no "wit," could he have had any motive for deceiving Barrington.



Now the important point is this, that while Bodener's spelling is so unconventional and so unaffected by Lhuyd's or any other system as to be the best possible corroboration of his statement "I never saw a Cornish book"; yet could one take the few sentences of his letter as a fair sample of his half-hour's conversation one would have to admit that this, "poor man-of-the-fishes," as he calls himself, late in the 18th century, not only could have taught Pryce something; not only wrote—and spelt—about as well as Lhuyd's "tutour," Keigwin, to say nothing of Gwavas and his cronies, but actually used a *purser* Cornish even than was written in the best days of the language by the authors of the miracle-plays; for while the latter graced their verse with much Chaucerian English and French—more perhaps than was well understood by their hearers—in the whole of Bodener's letter there is not a single word that is not good Cornish.\* Such an average might not have been maintained over many pages written on more general subjects, but the impression left is, that plain everyday Cornish such as would have made up the half-hour's talk of William Bodener or the perhaps equal number of words of the two or three minutes volley that Daines Barrington got from Dolly Pentreath, remained very little corrupted by admixture with English, and that the grotesque changes in some Cornish words as used in the dialect are not due to decay in the language itself, but simply to their long use by people who did not speak it. So that, for instance, it took several generations of ignorance of Cornish to turn *pajerpaw* into "padgettypoo," *pednpaly* into "pridden prall," *mijgemeres* into "midgetty-morrows," or *morgowl* in "marigold" and "madgy-owler." We may even take the more distorted of these as old loan-words borrowed by English-speakers from their Celtic-speaking neighbours, for in each of these examples, as in many others, the truer form

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\* This is at least literally true, for the one English word is "Cornish," i.e., for which moreover he knew the equivalent.



DOLLY PENTREATH.

From a portrait by John Opie at St. Michael's Mount.



is still known in the parts of West Cornwall where Cornish was last spoken, the more deformed variant coming from further east.

An instructive parallel may be drawn between these ill-used Celtic words and the distorted Welsh used, alongside of the correct language, by English speakers in Pembrokeshire and the Welsh Marches. Were Welsh by common consent to be abandoned, we might soon find Welshmen picking up these broken forms as part of the dialect of their neighbours, and learning, for instance, that "shiggutin" was "English" for *sigldin*, wagtail; "pembolade" was "English" for *penbyliad* tadpole; "pompren" for *pontbren*, wooden bridge, and so on through a list of over a hundred such Welsh-English words, that appear, rarely with a hint of their Celtic origin, in the *English Dialect Dictionary*. Perhaps even, had Welsh as curtailed a vocabulary and as little literature as Cornish, we should find Welsh students piecing together such tatters of their ancient speech as these. Meanwhile we of Cornwall, who have much such a work to do in recovering our own lost words, can gather from them hints as to the changes likely to be made in adapting Celtic words to English service.

To begin with, sounds like the spirant *ll*, *ch* and *rh*, so marked in Welsh and so difficult to English-speakers, are turned into others. A good example of this is *bara peillied*, "fine-flour bread," used over a large part of England as "bara-picklet" (or as "pikelet," or "pyflet," simply) of a sort of crumpet. Here the unpronounceable *ll* has become hardened to *k* or softened to *f*. Welsh *bwbach*, a scarecrow, becomes "bubbock," the unpronounceable *ch* turning to *k*; Welsh *rhocas*, a lad, loses its *h*, and also its sex, becoming "rockass," a girl. Another stumbling block is the combination in Welsh of consonants that rarely or never come together in English. In *shiguttin*, *pemboladc*, and *pompren* we have seen results of this. Last, but not least, is the system of

initial mutations under which the first letter of a Celtic word is softened or hardened according to rule, becoming from the English viewpoint another letter, or even disappearing altogether. "Fugle," to threaten, Welsh *bwgwl* in its mutation *fwgwl*, will serve as an instance of this, and as my appended list will show, can be matched with several words in Cornish dialect.

Of difficult sounds there are fewer in Cornish than in Welsh, for ours was always to English ears more euphonious, but there are some light effects of them, notably perhaps of the semi-guttural *gh*. In the names of the wrasse, itself claimed as a loan-word from Welsh *gwrach*, these are perhaps most marked. *Wrah*, in my list, is *gwragh*, the *g* lost by mutation, and the *gh* just audible, but variants are *wraa*, *wrath*, *wraff*, *ralph*, and *rasp*, the latter probably from English. In other words, as with Welsh *ch*, this *gh* becomes sharpened into *k*, of which that very interesting survival *hedokhagenah* gives an instance. The sharpening of a final *dh* into *th*, is only a seeming change, due to Lhuyd's and Williams' spelling, based on Welsh analogies, as Stokes and place names abundantly prove. The other normal alterations of sound that distinguish Cornish from Welsh or from Breton, and later from older Cornish, will soon become apparent to anyone who cares to study the examples given.

In conclusion, I ought to make it clear that my aim in writing as I have done of our 18th century Cornish worthies was not the impious and ungrateful one of slighting their achievements, but simply that of pointing out what the prejudices of their time caused them to miss, and what we in our own day shall have missed if we lose any opportunity of recording words as yet unwritten, and known only to "ancient persons," whose traditional knowledge is what the "superior person" is still too apt to regard as "ignorance."

# William Bodener's Letter to Daines Barrington 1776.

*Archæologia. V., p. 83.*

- 1.—Bluth<sup>1</sup> vee Eue try Egence a pemp.  
*Blóth vi yu try-igans ha pemp.*  
 My age is threescore and five.
- 2.—thearra<sup>2</sup> vee dean Boadjack an poscas.  
*Therav vi dên bohojak an poscas.*  
 I am a poor man of the fishes.
- 3.—me rig deskey Cornoack termen<sup>3</sup> me vee mawe.  
*Mi a wrig desky Kernuak termen mi a vê maw.*  
 I did learn Cornish time I was a boy.
- 4.—me vee demore gen cara vee a pemp dean moy en cock.  
*Mi a vê dho môr gen câr a vi ha pemp dên moy en cok.*  
 I was at sea with my father and five more men in the boat.
- 5.—me rig scantlower clowes Edenger sowsnaek Cowes en cock  
 rag sythen ware bar.  
*Mi a wrig scantlour clowas idn gêr Sowsnak cowses en cok  
 rag seithen warbar.*  
 I did hardly (*lit. scarce-enough*) hear one word of English  
 spoken in the boat for a week together.
- 6.—no rig a vee biscath<sup>4</sup> gwellas iever Cornoack.  
*Ni wrigav vi bisqueth gweles lever Kernuak.*  
 I did never see a Cornish book.
- 7.—me deskey Cornoack mous da more gen tees coath.<sup>5</sup>  
*Mi a (a wrig) desky Kernuak ow môs dho môr gen tis gôth.*  
 I did learn Cornish a-going to sea with old men.
- 8.—na ges moye vel pager pe pemp endreau<sup>6</sup> nye ell clappia<sup>7</sup>.  
 Cornish leben—  
*Nag es moy vel pager pe pemp en dêv ny a el clappia  
 "Cornish" lebben—*  
 There are not more than four or five in our town that can  
 talk Cornish now.



9.—poble coath pager egance blouth.

*Pobel gôth pajer-igans blôth.*

Old people four score years.

10.—Cornoack ewe all ne cea ves<sup>8</sup>. gen<sup>9</sup>. poble younk.

*Kernuak yu ol nakeves gen pobel iouank.*

Cornish is all forgotten by young people.

1. "Year," so used, cf. 1.9. 2. Misprinted *theatra*. 3. "Time I was . . .," for "when I was . . .," is still a dialect form. 4. Less "corrupt" than *besca*, Lhuyd's *besga*; for "orthography," c.f. Boson's spelling, "*na rigga ve beska gwella*" of these words in his *Nebbaz Gerriau*, f.3. 5. The mutation following a fem. noun is lost, as in *coath*, 1.9., *dho* should also cause mutation of *môr* following it, ll.4.7., strictly. 6. *An* causes mutation in *dreau*. 7. Misprinted *classia*. 8. Properly *ankeves*, this became *nakeres* (Gwavas MSS. f.131). Boson writes *nicovas*, "he forgot" in *Nebbaz Gerriau*, for *nî govas*. "he did not remember" which probably explains this change. 9. Misprinted *yen*, as also is *y* for *g* in *egance*. 1.9.

## TOMSON ON DOLLY PENTREATH.

1. Coth Doll Pentreath, cans<sup>1</sup> ha deau,  
*Côth Dhall Pentreath, cans ha deu.*  
Old Doll Pentreath, a hundred and two,
2. Marow ha kledyz<sup>2</sup> ed Paul pleau  
*Marow hag encledhes en Paul pleu*  
Dead and buried in Paul parish.
3. Na ed ay Egloz, gan pobel bras,  
*Nag et an eglos, gen pobel brâs,*  
Not in the church with great people.
4. Bes ed Egloz-hay<sup>3</sup> coth Dolly es<sup>4</sup>.  
*Bes en eglos-"hay" yu Dolly gôth,*  
But in the churchyard old Dolly is.

1 *blôth*, "years" is required. 2. c.f. *Maro ha klyzhes*, in Gwavas' *Creed*. Gw. MSS. f. 143. 3 "Hay" is English, from "Church-hay," a churchyard. 4. As written—"there is an old Dolly."

# Castle-an-Dinas and King Arthur.

A Paper read at Castle-an-Dinas, St. Columb, 5th July, 1921.

*By Henry Jenner, M.A., F.S.A.*

Castle-an-Dinas is the finest and most important hill-fort in Cornwall. Not only is it of large size and in very good preservation, but it occupies one of the most prominent and central positions in the county and, as we can see when we go there, it commands an extended view over a very large tract of country. It is therefore not unreasonable to conjecture that it was once the principal fortress in Cornwall. It belongs to the type of hill-fort usually classed vaguely as "Celtic." Mr. J. B. Cornish in his chapter on earthworks in the Victoria County History for Cornwall divides these structures, of which there are over 200, into six classes, Cliff Castles, Hill-forts, Defensive Enclosures of two or more lines, Defensive Enclosures of single banks, supposed Roman camps and what he calls "Plane-an-Gwariow," which is not, I think, the correct plural of Plan-an-gwary, "the plain of the play." The classification is on the whole a good one, though the distinction between hill-forts and defensive enclosures is not always clearly marked. Some of the latter, such as those around Gweek and the Helford river, must have been fortresses of importance, not merely defended villages. But of this particular fortress there is no doubt. The "Celtic" hill-fort is generally found on a more or less round-topped hill. On the summit of this a rampart of earth or loose stones is built, enclosing a considerable space, in this case an approximate circle with a diameter of between 500 and 600 feet. Below this is a ditch, beyond which comes another

similar ring rampart, which, being lower down the hill, has its top well below that of the inner ring, and beyond that is another ditch. The earthworks are so constructed that there is no hidden ground to afford cover for an enemy. Within the enclosure there is usually a well or reservoir for water, and in this case there are also two small tumuli. It is a remarkable thing that hill-forts of very similar construction, with earthworks and ditches in concentric circles, known as *pahs*, were very effectively used by the Maories in New Zealand as late as the Hau-Hau or Pai Mariri rising of 1865-6. The Maori ramparts were protected by stockades of pointed stakes sloping outwards. Possibly something of the sort was the case here also. Circular forts, like round towers, beehive huts, etc., mark a certain stage in construction. We have in Cornwall pre-Celtic, perhaps Neo-lithic hill forts, such as Carn Brea and Trencrom, where the granite boulders on the hills and the steep slopes determined the choice, and these are supplemented by irregular rubble walls stiffened by small monoliths as buttresses, but without ditches. Later come the round hill-forts, with concentric circles of vallum and foss (wall and ditch), such as this, the other Castle-an-Dinas in Ludgvan, Chun Castle in Morvah, Warbstow Burrows, and Car Brane in Sancreed, and most of the earthworks that are not on hill tops are also round. It is a considerable advance from these to the rectangular earthworks, of which Cornwall has but few, which are probably either Roman or constructed by Britons under Roman influence. In a similar way rectangular buildings of masonry are an advance on circular structures.

The date of Castle-an-Dinas is not known. The type is not uncommon, not only in Cornwall but in many parts of England and Wales. In Dorsetshire, Gloucestershire and Herefordshire there are a good many of them. About three years ago I visited a fine specimen at Wotton-under-Edge on a spur of the Cotswold Hills, and I remember seeing a very

large one some 50 years ago on a hill called Wopley, on the Welsh border just inside Herefordshire. There is nothing to show when they were built, but they were probably the work of Brythonic Celts, and are therefore not likely in any cases to be older than the fourth century before Christ, and many may be a good deal later. With many of them there is good reason to believe that they were used as late as the struggles between the Britons and the Saxons in the sixth century, and even later. There is therefore no reason to reject absolutely the local tradition which associates this hill-fort with the historical Arthur, and, as I hope to show presently, it may well be associated also with the Arthur of romance. The tradition which makes it a royal fortress comes into the Cornish drama of St. Meriasek. In that play the Christian Duke of Cornwall, who is evidently meant for the sixth century King of Damnonia, comes to fight the pagan King Teudar on behalf of St. Meriasek, and introduces himself as follows :—

Me yu duk in oll Kernow  
 Indella ytho ou thays  
 Hag uhel arluth in pou  
 A Tamar the Pen-an-ulays  
 Tregys off lemen heb wou.  
 Berth in Castel an Dynas  
 Sur in Peddre  
 Ha war an tyreth uhel  
 Thym yma castel arel  
 A veth gelwys Tyndagyl  
 Henna yu ou fen tregse.  
 I am duke in all Cornwall  
 So was my father  
 And a high lord in the country  
 From Tamar to the Land's End.  
 I am now truly dwelling  
 Within Castle-an-Dinas

Sure enough in Pydar.  
And up the country  
There is to me another castle  
Which is called Tintagel.  
That is my chief dwelling-seat.

The name of the fortress is of some interest. "Castle" is, of course, a borrowed word from Latin, Norman-French or English. It *may* be used here in the ordinary English sense, but in Cornwall, in the form *Kestle*, *Kessel*, it is certainly sometimes used, as St. Jerome uses *castellum* in his translation of the Bible, and as *Castel* and *Castello* are not uncommonly used in Italian place-names, to signify a small town or village, not necessarily fortified, but usually in an elevated position. There are three words in Cornish, Welsh and Breton for early forts or earthworks, *car*, *kear* or *caer*; *din* or *dun*; and *dinas*. *Din* or *dun* and the common Gaulish termination *dunum*, primarily mean a hill, and are found in other languages than Celtic, *down* and *dune* in English, *dune* in German and *dune* in French. In its application to fortresses it refers to position rather than construction. It is very common as a prefix in Gaelic place-names whether in Scotland or Ireland; Dundee, Dunbar, Dunkeld, Dumbarton, Dundalk and hundreds more. It is not very common in Wales or Cornwall, though *Din bach*, the little hill-fort, which we call "Denbigh," Dunheved, Dundadgel, Dinsul are instances of it. The adjective *dinnick* is common enough in Cornish names. In Breton the word is known, but is rare. *Car* or *caer*, whether it is or is not from the Latin *castra*, refers to construction rather than position, and seems originally to mean the wall rather than what it encloses. So it is applied in Cornish place-names to any sort of earthwork wherever situated. There are about 180 place-names in which *car* is the prefix, sometimes contracted; as in *Cranken*, which is *Car-anken*, the Castle of Sorrow, and *Crinnis*, which is *Car-Enys*, the Castle of the Island, and fields or

tenements called "Gear" or "The Gear," the same word with softened initial, may be counted by hundreds. In most of these places there are either the remains or the tradition of earthworks. In Welsh place-names it is the equivalent of *chester* or *bury* in English, and in Brittany, where prehistoric earthworks are rare, and, when they exist, are usually called by the borrowed word *Kamp*, it has come to be the regular word for a *town*, the equivalent of the Cornish *tre*. There are literally thousands of farms and manors whose names begin with *ker*. *Dinas* is recognised as a word in Breton, but I have not met with it in any place-name. In Wales there are several; Craig y Dinas, Dinas Emrys, Dinas Mawddwy, Dinas Powys, Dinas near Fishguard, and others, including two, Castell Dinas Bran, near Llangollen, and Castell Dinas near Tolgarth in Breconshire, which have "Castle" added to it. It is the regular word in the Welsh Bible for "city" and our Castle-an-Dinas would be well described in the Welsh of St. Matthew V. 14 as "*Dinas a osodir ar fryn*," "a city that is set on an hill," which "*ni ellir ei chuddio*," "cannot be hid." In Cornwall it is very common in place-names. There are two forts called Castle-an-Dinas, Little Dennis in St. Anthony in Meneage, Dinness in St. Clement, which is perhaps the Castellum Moreske of William of Worcester, Dinnis in Padstow, Dinas in Merther, Pendennis in Falmouth, Cardinnis in Buryan, Pendinas, the old name, according to Leland, of St. Ives, and I think that the dedication of St. Dennis was suggested by the church being built in a *dinas*. In most of these places some remains of fortifications are found. Cæsar, referring to the *oppidum* or town of Cassivellaunus, says that the Britons call a place *oppidum* when they have fortified the woods difficult of access with a vallum and a foss, into which they retire to avoid the attacks of enemies. Perhaps the British word which he translates by *oppidum* was *dinas*. Castle-an-Dinas may be a reduplication, meaning the *castellum* or town of



the city, or the castle of the castle, or it may be the castle of the city. But I think that in Cornwall, as in Wales, *dinas* commonly meant an inhabited fortress or walled town, and "Castle" is a mediæval addition.

Now what has King Arthur to do with this place? And the first question to answer is, who was King Arthur? And the answer to this is that there were three King Arthurs, or rather, perhaps, that the Arthur whom we know so well from romance, poetry and tradition is found under three different aspects. These are:—

The Mythological Arthur, a culture-hero or a solar-myth of the ancient Celts, or whatever he may have been.

The Historical Arthur, a real leader of the Britons against the Saxons and Picts in the early sixth century, and of the Christian and Romanized Britons against a recrudescence of Paganism.

The Arthur of Romance, a mixed idea, founded on the mythological and historical Arthurs, with a good deal of mediæval imagination added.

The mythological Arthur is rather an obscure idea. It is not quite clear what he represented and there are many theories. It would seem that Celtic pagan traditions of an early hero or sun-god with a name something like "Arthur" have been associated in men's minds with the traditions of the sixth century leader of the Britons against their Saxon foes. It is to the mythological Arthur that constellations, hills and other natural objects are dedicated, and after him, too, are called many of the mysterious pre-historic giant structures which the Saxons as Pagans called after their hero-god Woden, and when they became Christians attributed to the Devil—Woden's Dykes, Wensdykes, Grim's Dykes and Devil's Dykes. The mythological Arthur is not found in Cornwall, the native country of the real or historical Arthur, and probably the original home of the romances, but in

Wales and the Lowlands of Scotland he is all over the place. In Welsh folk-lore the constellation Lyra is "Telyn Arthur," Arthur's Harp, the Great Bear is "Aradr Arthur," Arthur's Plough, and Orion's Belt is "Llath Arthur," Arthur's Wand. At Craig y Dinas near Neath there is a legend of a cavern in which Arthur and his twelve knights are held, as in German legends of Charlemagne, Frederick Barbarossa and Holge, in a magic trance until they are to be called to deliver their country. As in the German story, the usual peasant finds his way in, behaves in the usual blundering fashion, says the wrong thing or asks the wrong question, and strange things happen. There is a wild Welsh tale of Arthur hunting the boar Trwyth from North Wales over to Ireland and thence to South Wales and Cornwall—a fairly long run—with his dog Caval. This must be an early story, for it is mentioned by the 8th century historian Nennius, who says that in his day the footprints of that dog might still be seen on a certain stone. In Scotland there are any number of seats (including the great hill by the side of Edinburgh), stones, ovens, chairs, wells, hills and other things called after Arthur, most of which seem to refer to the mythological hero, though since the historical Arthur really was at times in the country between the two Roman walls some may refer to him.

The Historical Arthur was a real man, a Romanized Briton or a Britonized Roman. Probably his name was the Latin Artorius. The name is found in Latin as early as one Marcus Artorius, who was a friend and physician of the Emperor Augustus, and the Royal Family of Damnonia, to which the historical Arthur belonged, used Latin names freely, Constantine, Urbinian, Gerontius, Ambrosius, Justus and others. According to the "Historia Britonum," commonly attributed to the 8th century Nennius, who is our earliest authority for his existence, Arthur was made "dux bellorum," war lord, though there were many of higher rank than he. Some MSS. of Nennius explain his name as meaning "Ursus

terribilis," the terrible bear. *Arth* is certainly the Welsh for bear, and the second part of the word was probably in Nennius's opinion *uthr*, horrible. The same MSS. call him also "Map Uther," filius horribilis, the dreadful boy, but his name was, as I have said, probably the Latin Artorius, and "Map Uther" probably really means the son of Uther. Etymology was not Nennius's strong point, for he interprets other names in quite an impossible fashion. He goes on to tell of Arthur's twelve victories over the Saxons, first at the river Glem or Glewi, said in some MSS. to be in Devonshire, second, third, fourth and fifth at the river Douglas in the region Linuis, which has not yet been identified, but Linuis may be the Lynher, and the "dark blue," for that is what the common river-name "Douglas" means, might be the river, now called Lynher, that runs past Callington into the "long-lake," for that is the probable meaning of Lynher, a creek of the Tamar. The sixth battle was at the river Bassas, which has not been identified. The seventh was at the wood of Celidon, which may be Kelly-dun, the grove of the hill-fort, now called Callington. The eighth, ninth and tenth were probably in West Cornwall. The "Castle called Guinnion" may be Carwinion in Mawnan, "the City of the Legion which is called Cair Lion," is quite likely to be Carlyon in St. Kea parish, and the tenth battle "on the river-bank called Trat Treuroit" may well mean "Treath Truro," the strand or river bank of Truro\*. The eleventh was at a place the name of which has various forms in the MSS., but the best seems to be either "Agued Mons," Mount Agued, which might be St. Agnes Beacon, or "Catbregon," which has been identified with Cadbury in Somersetshire, which is not improbable, if the twelfth, "Mons Badonis," Badon Mount, is close to Bath, perhaps what is now Lansdowne Hill, where 1,100 years later the Cornish royalists, under Sir Beville

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\*Truro is called "Trevret" in Domesday Book. At Carlyon, close to a circular earthwork, is a field with a tradition of a battle attached to it.

Grenville, defeated the Parliamentary rebels in 1643. It would do quite as well if Badon Mount is Badbury near Dorchester, as some hold it to be. It is only fair to say that sites for all twelve battles have been also found in South Scotland. This is all, except for a few details about the battles, that Nennius tells about Arthur. The expression "dux bellorum," war-leader, is an equivalent of the Roman title *imperator*, emperor, which literally means commander, and began by being a purely military title. There is good reason to believe that when in 410 the Roman legions were withdrawn from Britain the Britons, left to themselves, were divided up into a lot of little kingdoms. We know that there was a Kingdom of Damnonia, which included Cornwall, Devon, and most of Somerset, another of North Wales, another of South Wales, another of Powis to the east of North Wales, and a number of quite small districts, Elmet, Leodis, Ewyas, Gloucester and others, but these were all in West Britain, and only come into notice after the Saxons had acquired most of East Britain, so that we have no information about the kingdoms of that part. When the Saxon invasion began in about 450 and no doubt during earlier troubles with the Picts of Scotland and the Scots, as they were then called, of Ireland, the Britons elected emperors of their own on the Roman model, one of their kings or some member of a royal house, not necessarily a king. The duty of this Emperor was to be Commander-in-Chief of the united British forces. They had done something like it before the legions departed, for several usurping emperors had been set up in Britain, but when the Roman Empire had finally deserted Britain, they owed it no allegiance and were free to set up emperors of their own. They gave them in the British language a title of which the modern Welsh is *gwledig*, which is derived from *gwlad*, a country. One hears of Cunedda, Amlawdd, Ambrosius, and others being so called, and even Clemens Maximus, the Emperor elected in Britain in 383 and killed

by Theodosius in 388 is called in Welsh "Maxen Wledig." But when they spoke Latin, as the educated Britons of the 5th and 6th centuries certainly did, they used the title "Imperator" and in the Welsh mentions of him Arthur is always Emperor (*Amherawdwr*), not King. It is not really correct to talk about *King* Arthur. He was never King of anywhere and it is only due to a mistaken idea of Geoffrey of Monmouth, who makes all the elected war-leaders into Kings of Britain, that he is called so. But we shall probably go on calling him King Arthur all the same. The expression, however incorrect, is too firmly fixed in our minds.

Nennius wrote his muddled incoherent history in about the 8th century. He had apparently collected all the Welsh historical traditions that he could and put them together all anyhow in amazingly bad Latin. The Anglo-Saxon Chronicle, written from the Saxon point of view, never mentions Arthur or his battles. They wouldn't. Arthur was always victorious over them and defeats are better forgotten. Gildas, who must have known him personally, and was, if we may trust Welsh pedigrees, first cousin twice removed to him, never mentions Arthur, though he mentions his uncle Ambrosius. But his violent tirade against things in general, and the British kings and clergy in particular, is invective, not history, and, except for the five contemporary Kings whom he ballyrags fiercely, he mentions very few historical characters. But he does mention the last of the twelve battles of Arthur, Badon Mount. He implies that at that victory, which happened 44 years after the time of the landing of the Saxons, and probably about as long before the time at which he was writing, the Saxons were so completely defeated as to give no further trouble. Indeed, it seems that the Britons were not attacked again for some fifty years. It is probable, therefore, that the historical Arthur was a real successful leader of the Britons against the Saxons, whose career of victory lasted until about 530, and resulted in a



long check to the invaders. But that is all that we can say for certain about him.

The Romantic Arthur is founded on a mixture of the story of the historical Arthur with the vague legends and folk-lore of the mythological character with a somewhat similar name. Legends and traditions, some of which may well have had a foundation in historical fact, grew up in process of time round the person of the great British leader. Mr. G. K. Chesterton has wittily said that Arthur must have been a real man or it would not have been worth while to tell lies about him. No doubt in the legends associated with his name there are many things which did not happen at all in real fact, purely fictitious inventions, written consciously as romance. There were also many more which may have really happened to somebody, but not necessarily to Arthur, and there are also some which are probably true. We find a few vague indications of the existence of Arthurian tradition late in the 11th and early in the 12th century. In Italy names taken from the Arthurian story are found as early as the end of the 11th century, perhaps introduced there by the Normans, who had heard the stories from the Bretons. In 1113 some monks from Laon in eastern France came to England on a sort of begging tour and went among other places to Bodmin. They were shown "Arthur's Chair" and "Arthur's Oven" and narrowly escaped being "knifed" by an indignant Cornishman, because they refused to believe that Arthur was still alive and would come again. They were told also that Cornwall was truly his native land, though nothing was said about his exact birthplace. The contemporary narrator of this story, Hermann of Laon, who was probably one of the party, says that similar stories were known in Brittany. But the real promulgation of the Arthurian romance began when Geoffrey of Monmouth published his History of the Kings of Britain in 1148. This astonishing book, which certainly embodies a large amount of



Welsh, Cornish and Breton historical tradition, caught on at once, and almost immediately the writing of romances founded on it began. It is not as yet possible to identify the sources of Geoffrey's story, or to make sure that his own account of them, to which I shall return presently, is true. It has been held that two Welsh chronicles, one known for no very clear reason as the Chronicle of Tyssilio, and the other as the Chronicle of the Kings, were his original sources, and many beautiful theories have been founded on this idea, but my own belief, expressed as long ago as 1883 in the Catalogue of MS. Romances in the British Museum, is that they are both nothing but abridged translations of Geoffrey's History. It is possible that what Geoffrey did was to collect stories from various sources, chiefly, I think, Cornish or Breton, and to give them literary form, which meant "faking" them a good deal after the manner of the period, and giving them a 12th century instead of a 6th century *mise-en-scène*. But I think he had a real book, of which I shall speak later. Whatever his sources or whatever he did with them, we must take Geoffrey's history as the groundwork of the Arthur romances, except those relating to the Holy Grail, which last are romances written with the purpose of putting forward certain ideas with regard to the Eucharist, which at the time were being greatly discussed, and they were only tacked on to the Arthurian story by way of giving them a romantic setting. On Geoffrey's foundation was built the "Merlin" of Robert de Borron, which tells of the birth and a great part of the life of the Romantic Arthur, and the "Lancelot," which tells the story of Lancelot and the Quest of the Grail, and continues to the death of Arthur. From these and the Tristan story Sir Thomas Malory compiled his "Morte d'Arthur" at the instigation of Caxton, who printed it in 1485, and this is the form in which Arthur is best known to such English readers as have cared to go beyond Tennyson's Idylls of the King.

All the accounts which derive from Geoffrey of Monmouth make Tintagel the birthplace of Arthur. I am inclined to think that Geoffrey invented that idea, having no further information than that Arthur was born at some castle in Cornwall. In his day Tintagel was the principal and strongest castle of the Earl of Cornwall, who when Geoffrey wrote, was Reginald Fitz-Henry, a natural son of Henry I., and brother of the Robert of Gloucester to whom the first part of the History is dedicated. My idea is that with that curious lack of historical perspective so common among mediæval historians, Geoffrey jumped to the conclusion that because in his own time Tintagel was the chief castle of the Earl of Cornwall, therefore it must have been so in the 6th century.

The story as he tells it is as follows. Uther Pendragon, King, or more correctly War Lord or Imperator, of Britain, fell deeply in love with Igera, the wife of Gorlois, Duke of Cornwall. Gorlois naturally objected to the King's marked attentions to his wife and took her away from the court. Uther summoned them back, and because they refused to come, he invaded Cornwall with a great army and devastated the country. Gorlois had insufficient troops to oppose him, and judged it better to fortify his castles until he could get help from Ireland. This is rather an interesting detail and seems to hint that Gorlois, who certainly did not belong to the Royal House of the Kingdom of Damnonia, may have been one of the "Scots" from Ireland who are known to have made settlements in Cornwall. Geoffrey says that he put his wife into the strong castle of Tintagel and himself into another fortress called Dimilioc, where Uther besieged him. While Gorlois was shut up in Dimilioc, Uther devised a scheme by the help of Merlin whereby he could get at Igera. By magic Merlin transformed Uther into the likeness of Gorlois, Ulfen of Ricaradoc, a personal attendant of Uther, into the likeness of Jordan of Tintagel, a friend of the Duke,

and himself into the likeness of Bricel, or Britel, as the French romance calls him, another of his attendants. They rode to Tintagel, where everybody, including Igera herself, believed them to be what they appeared to be. Meanwhile Gorlois made a sortie from Dimilioc and was slain. Later Arthur, the son of Uther and Igera, was born at Tintagel. The "Merlin" of Robert de Borron calls Gorlois Duke of "Tintaiel," but does not give his name, nor does Malory, and the castle in which Igera is put is "Tintaiel," but the other castle is not named. The rest of the story is the same as in Geoffrey, with one added touch that Uther is very anxious to find out the exact hour at which Gorlois was killed, a point which would affect the legitimacy of Arthur, before whose birth Uther married Igera. Malory calls the other castle "Terrabil," but I do not know where he gets the name.

In quite modern times an earthwork in St. Kew, originally known by the not very distinctive name of "Tregear," which means only the Town of the Fortress, has had attached to it the name of "Damelioc." This quite unauthorised identification, which has been adopted by the Ordnance Survey maps, rests on the very inadequate evidence that it is only eight miles from Tintagel, which hardly seems sufficient. Warbstow Burrows, a much finer and stronger hill-fort, nearly as fine as Castle-an-Dinas, would have done quite as well as regards distance. But what is the good of inventing a Dimilioc, when there is a place ready to hand which has certainly borne that name ever since the Domesday Survey of 1087? Dimelihoc at that date was held of the Earl of Mortain by one Gunhar, and this is undoubtedly the manor now called Domellick or Damelioc in St. Dennis, about four miles in a straight line from Castle-an-Dinas. The name implies a hill-fort, for it is probably Dunmelioc, the Dun or Fort of Melioc or Maeloc. I would conjecture that the castle of Dimilioc was the hill-fort in which the church of St. Dennis now stands.

Now a story which should make Gorlois hold Domellick, about whose position there is no doubt, and put his wife, whom he wished to protect, in Tintagel at least 25 miles off, seems very improbable, and as Geoffrey tells it, the two places could not have been very far apart. We must therefore conclude that Geoffrey, who, I think, is the first person who ever mentions Tintagel, made a wrong guess. It was a very natural mistake to make. He found the name of Dimilioc in his authority, whatever that may have been. He says that he took his history from a very old book in the British tongue, given to him by Walter, Archdeacon of Oxford, who brought it from Brittany. No one knows what that book was, and, as I have said already, the claims of the so-called Chronicle of Tyssilio and the Brut y Brenhinoedd to be that authority are worthless. But whatever it was, it must have given the name of Dimilioc, for Geoffrey was not likely to have invented it. If he had had to invent a name he would have chosen a better known place. Probably his original source appeared not to give the name of the fortress in which Gorlois put Igerna, and for reasons which I have already given he concluded that it must have been Tintagel. This sort of anachronism is quite common. Some of the Welsh tales locate events in the Tower of London long before that Tower was built, and Geoffrey himself makes the murder of the two sons of Modred by Constantine, the successor of Arthur, take place in a church at Winchester, whereas there is no doubt that Winchester at that time was in Saxon hands, and quite inaccessible to a Briton. Probably his authority said "Caer Went," which is very nearly the Welsh for Winchester, but meant the Roman city of that name in Monmouthshire.

If the scene of Uther's deception of Igerna and of Arthur's birth was not at Tintagel, where was it? And another question is, did Geoffrey's authority really omit to give the name? To answer the last question first, I think it is quite probable that the original, which it is to be

remembered was "in the British tongue," said that Gorlois put his wife into "The Castle" and himself into Dimilioc. Says Geoffrey, when he read it, "An Dinas," "The Castle," oh, of course, that must mean Tintagel." But he mistook a proper name for a common noun, and what his British authority really meant was that Gorlois put Igera into Castle-an-Dinas. This, at any rate, is what I believe to have been the case, though one cannot prove it until one finds a copy of the book in the British tongue which Walter the Archdeacon brought out of Brittany. Geoffrey was a very accomplished liar, it is true, but his use of the name of Dimilioc, an absolutely unlikely name for a man who did not know Cornwall to choose, and very improbable for one who did, makes me quite certain that he had an original to copy from, and this was, I have very little doubt, given to him, as he asserts, by Archdeacon Walter, who, when the History was published in 1148 was alive to contradict him if his statement had been untrue. Also this original book was either in Breton or Cornish, not in Welsh, for the forms of proper names do not as a rule seem to be Welsh. There is nothing improbable in "An Dinas," "The Castle" or "The City" being used as a proper name. We have analogous names such as Chester, Caistor, etc., derived from the Latin "Castra," and meaning a fortified town in general, but used without any epithet in these cases, and when we speak of the real London, as distinguished from the huge province covered with houses which has grown up around it, we habitually call it "The City." "An Dinas," the City *par excellence*, was perhaps the capital of Cornwall in the time of Gorlois. The fact that a narrative which, whether Geoffrey obtained it in Breton or Cornish, was evidently written or told originally by a Cornishman, should speak of Gorlois's two fortresses as "An Dinas" and "Dimilioc" is very much in favour of the story being true in the main. I do not mean to say that we must accept the enchantment theory. I suspect that was Igera's story, and, given the



contemporary ideas about what magic could do, it was not a bad way of saving her reputation. What could she do against Merlin's magic? But it is quite probable that Gorlois and Igrna were real people and that Uther did manage to meet the latter in "The Castle" and that there Arthur was born. It is also quite probable that Gorlois was killed at Dimilioc, and that Uther married Igrna.

After Geoffrey's mention of it as Arthur's birthplace, which, as I have said, seems to be the first mention of it anywhere, for nothing is said about it even in Domesday Book, Tintagel rose into prominence in the Arthurian romances. The later and elaborated forms of the story of Tristan and Ysolt, which as Professor Loth has shown, is an early story of Cornish origin, makes Tintagel the Castle of King Mark, whereas the early poems, which were probably written before Geoffrey's "booming" of Tintagel, place him at Lantien, which is evidently Lantine in Golant, and set the scene of the romance in identifiable places all along the South Coast of Cornwall from Fowey to the Mount, and they do not mention Tintagel, for the excellent reason that it probably was not built when they were written, and there is no evidence of the existence of an earlier castle there, though the name suggests that there may have been one, unless it was first given to the Norman stronghold. The Norman castle was one of four, Tintagel, Launceston, Restormel and Trematon, which were at the four angles of a square with sides of 20 miles, evidently an intentional arrangement. Round Tintagel have grown up a very few Arthurian place-names which, I think, are comparatively modern and are evidently literary borrowings from the romances, just as we find round Lynton and Lynmouth and on the neighbouring Exmoor places with names derived from Blackmore's well-known novel "Lorna Doone," and just as "Ellen's Isle" on Loch Katrine is named from Scott's "Lady of the Lake." But not very far from Castle-an-Dinas there are two Arthurian place-names which have no literary flavour.



Tremodrett in Roche certainly means the Town of Modred, but whether it is called after the nephew of Arthur who rebelled against him or after another man of the same name it is impossible to say. It is an old name, for it is that of a Domesday Book manor. Enniscavan in St. Dennis seems to mean the Island of Gavan, which is a form of the name which appears in the Romances as Gawain, one of the most celebrated of Arthur's knights. But there are several places in Cornwall other than Tintagel where Arthurian associations as exemplified in place-names are more common. There is also a distinct Arthurian tradition at Castle-an-Dinas. William of Worcester in his Itinerary of 1478 mentions it. He speaks of "The ruined Castle Dynas on a high hill, and a well in the middle of the fort, where Tador Duke of Cornwall, the husband of the mother of Arthur was slain, near the town of St. Columb." I think this "Tador" is a confusion of Gorlois with the "Cadur of Cornwall" of the Arthurian romances, who was really a man of the next generation, a son of Geraint ap Erbyn, first cousin of Arthur. He evidently got hold of a local tradition which associated Castle-an-Dinas with the incident of Gorlois, Igerne and Uther, though it did not agree with Geoffrey's authority, when it made Castle-an-Dinas instead of Dimilioc the scene of Gorlois's death. After all, Geoffrey is the only authority for Gorlois as the name of Igerne's husband, so William of Worcester may be right about Tador, though Gorlois is a real name, which comes into Cornish place-names. It is curious that Bosigron, which may well mean the Dwelling of Igerne, in Zenor, is a very short walk from Bosworlas, the Dwelling of Gorlois, in St. Just. There have always been floating legends that King Arthur used Castle-an-Dinas as a hunting-seat, when he chased the deer on Gossmoor. More than 50 years ago an old man at Quoit told me that the ghosts of King Arthur's soldiers had often been seen drilling on the slopes of the hill. I think I understood him to say that he had seen them himself,

and knew that they were soldiers because he had seen "the moonbeams glancing on their muskets."

I think my conclusions are that wherever King Arthur was born it was not at Tintagel Castle, which was only a bad guess of Geoffrey of Monmouth, for it was not built until after 1087. It seems much more probable that he was born at Castle-an-Dinas, which is certainly the finest and most conspicuously Celtic hill-fort in all Cornwall, then, as now, belonging to the Duke of Cornwall, and where there are distinct Arthurian traditions independent of books. It would please me particularly to be able quite to prove it, which I fear will not be possible, for then it would follow that King Arthur and I were born in the same parish.

# Remarks on the Geology of Castle-an-Dinas, St. Columb.

*By E. H. Davison, B.Sc., F.G.S.*

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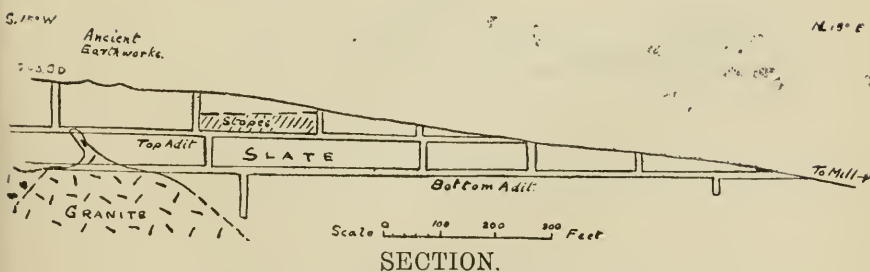
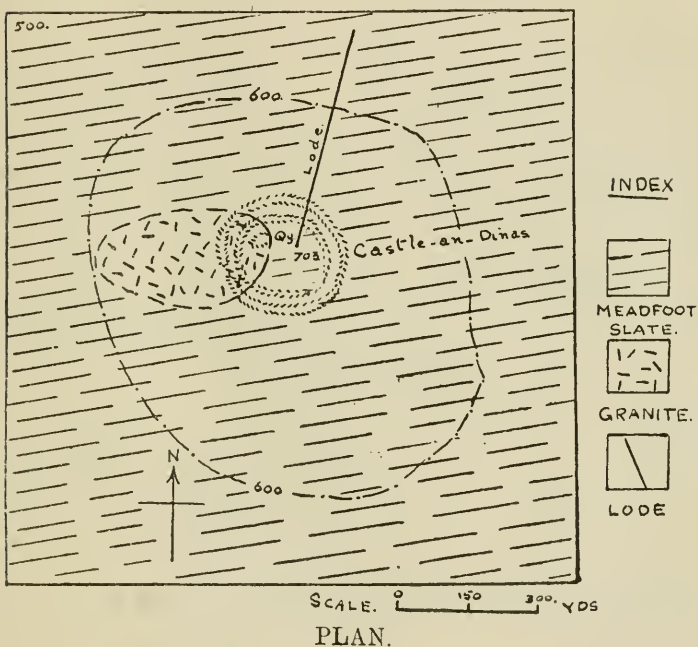
From our position on top of the hill we can reproduce in imagination the geography of early Pliocene times. We should be standing on an island with a broad bay or estuary to the south on the site of the Goss Moors, with the granite highlands of the St. Austell mass rising to a much greater height than at present. Belowda Beacon to the east would be another island, and St. Dennis hill an island or promontary.

The hill owes its existence to the presence of a granite "cupola" which outcrops on the north-western side, and which has hardened the slate around both by heating and by the action of chemically active vapours which have tourmalinised it. At the summit of its outcrop the granite has a texture resembling that of a quartz porphyry with hexagonal crystals of quartz as prominent constituents. Lower down the hill the granite has a more normal character and in the mine where the level cuts the granite it is seen as a typical granite, both coarse and fine in grain.

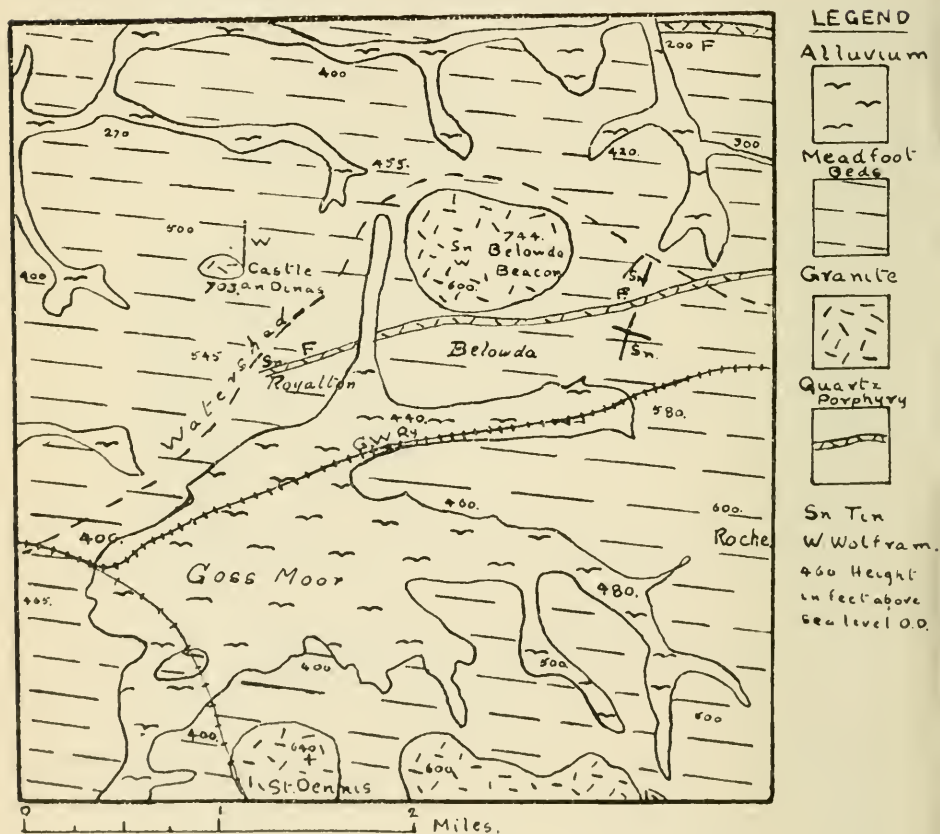
In the clay slate is a fissure running almost north and south and practically vertical, which has been filled by quartz carrying wolfram. This wolfram lode was worked during the war and produced wolfram of exceptional quality, being so free from cassiterite that no separation of that mineral is required. The vein consists practically entirely of quartz and wolfram, only traces of other minerals being present.

The lode is worked by levels driven into the hillside, the ore being trammed out to the mill below.

The party then examined the outcrop of the granite on the top of the hill, and the more energetic walked down to the mine to collect specimens from the dump material.



Reprinted from *Geological Magazine*.



SKETCH MAP OF GOSS MOOR AREA

Reprinted from C.M.S. Magazine.

# Some Recent Additions to our Knowledge of Cornish Geology.

*By E. H. Davison, B.Sc., F.G.S.*

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The following paper consists essentially of a series of notes on new facts regarding the geology of Cornwall, both on the purely scientific side and as regards the economic side of the science, which have come to my knowledge during the last eighteen months. In most cases the original observations were made by one or another of my students sometimes as the result of suggestions made by others, at other times entirely original. I have endeavoured to give full credit to original observer whenever possible.

I have intentionally avoided detailed technical descriptions as far as possible and have kept to the broad facts in each case in the hope that the non-technical members of my audience will not be dismayed by the large number of technical terms which would otherwise be necessary.

The occurrences described in the papers are as follows :—

1. A new type of basic igneous rock from Porthglaze Cove, Gurnard's Head.
2. A type of tourmalinised granite not previously described from Wheal Providence, Carbis Bay.
3. An unusual form of altered "Elvan" from Carn Menellis district.
4. The occurrence of Platinum in the alluvial gravels of the Lizard.
5. The occurrence of Gold in the Carn Menellis district.
6. Green clay on Goonhilly Downs.
7. Fuller's Earth at Treamble.



1. In August 1920 Mr. Castier, who was then a student at the School of Metalliferous Mining, and has since gone to the Ouro Preto Mine, Brazil, told me he had noticed a strange rock at Porthglaze Cove just to the north-east of Gurnard's Head. At the first opportunity I visited the Cove and found in its western corner a basic igneous rock, with patches and lenticular areas of pale coloured more acid material, forming the cliff to a height of about 120 feet above sea level and for a distance of about 40 yards to the west.

The rock has a black and pink foliated appearance, the black part being composed of hornblende, iron ore and a little felspar, while the pink part is composed of altered orthoclase felspar with some sphene and apatite. The Specific Gravity is 2.82, and the general character of the rock reminds one of the Kennack Gneiss of the Lizard, and it seems to have originated similarly from a magma composed of imperfectly mixed acid and basic material. The rocks in the immediate neighbourhood of this mixed rock are intruded by granite veins, the granite slate contact being visible in the cliff 50 yards to the east. It has been suggested that the mixed rock originated as a result of the absorption of the "greenstone" by the granite, but the field relations of the two rocks do not support this view. I am at present engaged in a thorough examination of the mixed rock which should throw light on its origin.

I have since seen a similar type of greenstone in the Botallack Cliffs.

A microscopic study of the rock shows that the coarsely foliated character which is a common feature was the result of movement while the magma was still fluid and not of pressure subsequent to solidification.

2. Early this year Mr. Simmonds brought me a specimen of tourmalinised granite from Wheal Providence dumps, Carbis Bay, which has unusual characters. The rock

occurred in the dump material, there being several blocks exposed when the dump was being shifted for road material.

The rock shows pink orthoclase and quartz, with coarsely crystallised prisms of tourmaline and nests of yellowish muscovite, with some chlorite. At first sight it appears similar to tourmatinised granite of the Luxulyanite type, but the tourmaline occurs in groups of well developed prisms arranged parallel to one another, and not in radiating needles of small size as is the case in Luxulyanite. The presence of the muscovite is another point of difference. The quartz and felspar frequently show pegmatitic intergrowth; the tourmaline also is seen to penetrate the felspar, and all four minerals (quartz, felspar, tourmaline, and mica) seem to have crystallised simultaneously to form a pegmatite.

3. On a visit to Carn Menellis district last April I came across a type of altered "Elvan" which has unusual characters. The dyke of "Elvan" (Quartz Porphyry) is worked on the hillside just above Carn Menellis Church, and is seen in the quarry to be a fine grained rock of a pale buff colour composed of occasional phenocrysts of quartz and felspar in a fine grained felsitic ground mass. Scattered through the rock here and there are cubic crystals of pyrite which are oxidizing to limonite and are surrounded by a ring of red-brown iron stain. The altered type is of a pale yellowish green colour which has been brecciated and recemented by quartz showing comb structure. Under the microscope the ground mass is seen to be composed of an extremely fine grained mosaic of quartz, chlorite, muscovite, and secondary silica.

The original felspar phenocrysts have been entirely removed by silicification and with the silica lithia micas have been introduced.

4. When Dr. Rastall read his paper on "Ore Deposits of Igneous Origin" before the Cornish Institute of Engineers last April he suggested that according to the character of

the Lizard rocks they should very probably contain platinum, and he suggested that the best place to hunt for the metal would be in the alluvial gravels of the serpentine area. As the outcome of this suggestion two of my students (Messrs. MacPherson and Lamb) visited several localities on the Lizard and collected samples of the river gravels. The concentrate obtained by panning the samples from one locality they assayed and it proved to contain a small quantity of Platinum. They then obtained a prospecting licence and made a more thorough examination of the area, but unfortunately with no satisfactory results. It appears then that Platinum undoubtedly occurs in the Lizard district associated with the ultrabasic rocks there, but not in quantities of economic importance. This is what one would expect considering the small amount of real alluvial material in the district.

5. Another interesting occurrence (but not one which can be claimed as new) was confirmed by Messrs. Kitto and Linné, who during the study of an alluvium area in the Carn Menellis district found that the alluvial sands contained gold. This metal has been recorded from the district before so that this cannot be considered a discovery but is interesting as confirming a previous report and as indicative of the wide spread distribution of small quantities of gold in the county.

Other economic products which are now being worked in the county and which can be considered as additions to the list of Cornish products are:—

(a). The Green Clay worked in the Mullion district, which can be seen by the side of the high road on Goonhilly Downs to occur near the junction of the ancient Lizard granite and the serpentine.

(b). The St. Agnes Pliocene sand which is now being dug for core sand.

7. The last occurrence I have to note is that of a clay deposit at Treamble, near Perranporth. This was discovered

by Mr. Stephen Clark, of Treamble, about 12 months ago. The clay occurs alongside the Great Perran Iron Lode in the clay slate on the eastern side of the Treamble valley, its analysis (communicated by Mr. Clark) being:—

	Fullers Earth.	Clay Slate.
Si 02	56.37 per cent.	55.00
Ah 03	24.20	23.08
Fez 03	0.41	8.16
Ca 0	0.31	5.36
Mg 0	0.29	2.52
Na 20 K 20	1.38 82.96	3.00 97.12
Ti 02	trace	
S 03	trace	
H 20 free	12.4	
H 20 combined	4.58	

The clay has been classified as a Fuller's Earth of exceptionally good quality and seems to be connected with the branching of the iron lode at Treamble, and with the intersection of the lode by a N. and S. fault. At the time of my visit, however, the deposit was not sufficiently well exposed to show its relations clearly. It is undoubtedly an alteration product of the clayslate and the comparison of its analysis with that of the clay slate is of interest. This shows that in the change to the " Fuller's Earth " the slate has lost Fe 0, Ca 0, Mg 0, and some alkalies, silica and alumina, giving a gross loss of solid constituents of 14.5 per cent., which seems to indicate that leaching by water or solutions was the cause of the alteration.

Though this contribution to your societies is of a disconnected character, it serves, I think, to show (1) that the spirit of geological enquiry is not dead in the country, and (2) that there are still deposits of economic value to be discovered in addition to those we already know of.

# The Manor of Arwenack.

A Paper read at the Summer Meeting of the Royal Cornwall Polytechnic Society, 6th July, 1921.

*By F. J. Bourles, J.P.*

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“ We are told in Bannister’s Cornish Glossary that the word Arwenack means “ on or upon the marsh,” and though this title may not seem very appropriate to present circumstances, yet, if we go back two or three hundred years, we shall find conditions to justify it. There was then no road in front as the ground sloped down to the sea level, and on the south it was bounded by a series of marshy pools, the remains of which can be seen near Grove Hill Lodge, while others existed almost continuously where Smith’s garage and the R.E. Barracks now stand, and more on the site of Railway Cottages and the old Bar pools where the Manor mill stood and was worked by the tide. At the other end of the estate was the Moor reaching up to Cross Row, and with two streams running down from Brook-street and Trevethan to the Market Strand. The whole site is alluvial to the present day, and great difficulties were experienced when the Town Hall, Municipal Buildings and Packet Memorial were constructed, so that on the whole we may acquiesce in the title. Before the time when it came into the possession of the Killigrews, there are very few records of the house, but it is stated that in 1264 the Manor was let to the then Rector of St. Columb Major on a life lease at 30s. per annum for the whole, and in a Cornish religious drama dealing with early events in Bible history, we are told that when the carpenters employed by Solomon to build the Temple reported to him

that their work was finished, the generous monarch promptly promised them several manors and estates in payment, of which Arwenack was one, while Tregenver and Kergillack were also included. History may be said to begin as far as Arwenack is concerned in 1377, when Simon Killigrew, of St. Erme, married Jane or Joan, the daughter and heiress of Robert, of Arwenack, and a few years later removed to the house which then occupied the site and settled down there. Nearly 200 years later John Killigrew, the first captain of Pendennis, rebuilt Arwenack, which was described at the time as the finest and most costly in the county. A recent copy of a conjectural restoration in the possession of Mr. John Chelley is now shown, and it will be seen that the buildings enclosed a quadrangle on three sides, and on the fourth side there faced the harbour a tower with flanking walls, of which no trace remains. On the south and north sides there were distinct suites of apartments, and on the west side were the kitchens which communicated into the banqueting hall, which stood apart at the south-western extremity. The large ovens and open chimneys are still to be seen. That which seemed to be a tower in the angle between the hall and the south side of the house was open behind so that it must have formed part of other buildings not now recognisable. The circular tower at the north angle of the original structure is pierced with loop holes for musketry to command the front and north walls, and there may be noticed a stockade to cover this north wall. In some maps an earth work or "barrycade" is shown, which covers the approach seaward. Several stone balls have been found which were originally placed not as now at the portal, but as finials over the gable ends of the house. The cantilevers over the arched entrance may have supported a coat of arms or hatchment. The stables still remain between the house and the original approach, and with the walled gardens, the ponds and the extensive park, whose railings ran in an irregular line from Swanpool to Market Strand, all testify to the taste



and opulence of the Killigrews at his period. The first two Sir John Killigrews lived in great style, and many sumptuous feasts and entertainments were prepared in the old kitchen and served in the banqueting hall, which is the most conspicuous part of the ruins. Sir Walter Raleigh was lodged here and made a full and favourable report as to the possibilities of the place for a town and haven. The large estates and princely incomes of the Killigrews at this period were soon, however, dissipated by extravagant living and indulgence in life at Court and gambling, as was common in those days, and in 1596 the reigning Sir John pleads poverty and urges the need of money to fortify and man Pendennis, enclosing with his petition an affidavit from one Richard Perne, of Penryn, who declared that having been taken prisoner by the Spaniards he had become acquainted with a plot to burn Arwenack and carry Sir John and his family captive. It would seem that some such attempt was made and an actual landing took place, but being discovered the attackers quickly cleared out and returned home, where their leader gave such an account of his exploits that the King of Spain rewarded him with a substantial gift and a pension for life. In the next generation the outstanding personage at the Manor House was Lady Jane Killigrew, a daughter of Sir George Fermor, and a lady whose private life and public actions seem to have left much to be desired even if—as seems likely—she was not guilty of all that had been laid to her charge. Her husband, the third Sir John, spent nearly all that was left of his diminished income in divorce proceedings, which, in those days, were by no means so expeditious and inexpensive as some people would like to make them now. Shortly after the divorce, Lady Jane married Captain Bluett, of Trevethan, and lived with him at Arwenack until it was burnt down in 1646. This lady gave to the Mayors of Penryn a noble silver cup, now valued at £3,000, which, through the kindness of the present Mayor, had been brought there for inspection. It may be taken as well established that the

kindness shown her by the Mayors of Penryn when she was, as she says, "in great miserie" arose out of the divorce proceedings and other domestic troubles and that the story of her piratical exploits told by Hals had reference to her husband's grandmother, though such deeds were common enough in Cornwall at that period.

It will always remain uncertain whether the burning of Arwenack Manor House just before the siege of Pendennis was due to the defenders or besiegers or was the result of accident, but, in any case, it ended the glory of the building. Sir Peter, to whom the property passed in 1633, was not in residence at the time, but was sharing the misfortunes of his Royal Master, for which he was rewarded in 1662 by the Charter and Acts of Parliament establishing the Borough and Parish of Falmouth with its markets, quays, and other privileges. Lady Jane died some two years after the burning of the house, and the remains were then patched up and occupied by Sir Peter the Second for some years. Later on, it was inhabited by the Rev. Walter Quarme, who combined the offices of Rector and Manor agent until about 1700, when having displeased Sir Peter, he was dismissed from the latter post and Martin Lister, who assumed the name of Killigrew after marrying the heiress, came into residence and ruled vigorously until 1735, when he removed to London, and left Mr. Abraham Hall to carry on at Arwenack. Martin Killigrew wrote a manuscript history of the family and their and his disputes with the newly-formed Corporation, also many letters which are preserved, and in one of these there are minute instructions as to the preparations for a visit from Col. West, who had married the then heiress. The agent was instructed to engage the best cook the town affords, to obtain hams and fat chickens, and if any green tea was to be had to secure some of it, and two large teapots, as the colonel drank much tea. Glasses, forks, knives, spoons, etc., were all to be borrowed, and, finally, the agent was to pray his mother to trouble the visitors with as little of her conversation as the

business would admit of. Meanwhile the house was in a very bad condition, and there are frequent letters urging the necessity for repairs. Captain Upton rented part of it and lived there together with the Halls, father and son, who were agents in succession. The growing town encroached upon the gardens, and the trees where Grove-place now stands were cut down and the old avenue, of which the gate posts still remain, was let in 1737 to Thomas Deeble for a rope walk. After leaving Falmouth, Martin Killigrew caused the pyramid now in front of the house to be erected as a memorial of the family, but forbade any inscription to be placed on it. The original site was at the top of the grove near Hull's Lane, and it was built by John Ragland, at a cost of £450, but later on was removed to near Lansdowne-road, and finally to its present position. Some time after 1786 the old buildings were added to, and the ruins of the central tower removed.

A local poem written in 1796 says in reference to Arwenack :

To spoil this wall a ruthless Vandal came,  
Sprung from the waves and Tauro was his name,  
A venerable wall for ages stood,  
The only vestige of an old abode.

The reference is undoubtedly to a member of the Bull family, so closely identified with the Naval history and progress of Falmouth for many generations, and we find that in 1825 Captain James Bull occupied one part, and a Mr. Lako the other, both representing families well known and respected. The plan now exhibited shows the new buildings coloured red, and an engraving, kindly lent by Mr. E. E. Armitage, shows the eastern part before the additions were made. A new office was built, and the entrance renewed in quite recent times, and the buildings used as two residences, one for successive Manor agents, and the other by various tenants, of whom the most noticeable have been Admiral Versturme, whose tragic suicide in the house created a great sensation some thirty years ago, Dr. King Bullmore, various

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members of the Bull and Mansel families, and quite lately the Marquis of Hertford, and lastly, Mr. and Mrs. John Chelley, whose kind hospitality we are enjoying to-day. This portion of the building would make an admirable home for a local museum dealing with objects connected with the history of the town, and we hope that means may one day be forthcoming to bring this about.

# Report of the Conference of Corresponding Societies.

At the Meeting of the British Association at Edinburgh, September, 1921.

*By H. D. Acland, F.S.A., delegate of the Royal Cornwall  
Polytechnic Society.*

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I have the honour to report that having been appointed delegate of the Royal Cornwall Polytechnic Society, I attended the Conference of Delegates of Corresponding Societies at the meeting of the British Association at Edinburgh.

There were two sessions. The first was held on Thursday, September 8th, 1921, when the President of the Conference, Sir Richard Gregory, Editor of "Nature," gave his presidential address, "The Message of Science." Sir Leslie Mackenzie read a paper on "Science and Citizenship," on which Mr. Andrew Eunson, ex-President of the Edinburgh Trades Council, spoke. The second Session was held on September 13th, when Prof. Patrick Geddes and Mrs. Fraser Davies opened a discussion on "Regional Surveys."

The principal themes of Sir Richard Gregory's address were that when science was "controlled by the spirit of profitable application" it became degraded. Instead of beautifying life it had been used to convert beautiful countryside into grimy centres of industrialism. Science and Religion are no longer supposed to be in antagonism, but when phenomena are presumed to be supernatural, Science has every right to challenge and to investigate them. Care's observation and experiment show that events in nature are

determined by permanent law, hence the decline of belief in astrology, necromancy and sorcery. The late war was responsible for the revival of some of these things, but Science will investigate them. Science should not be blamed for its misuse. Mankind has often shown himself unworthy of the gifts God has given. People must be disabused of the idea that the legitimate use of science is the diabolical acts of war. Sir Richard quoted a sentence from Ruskin in "The Crown of Wild Olives," which expressed the opinion that the object of science is the destruction of life. He classed Ruskin with "others superficial writers." He urged the Labour Unions to themselves promote research and not merely take advantage of the discoveries of scientific men. Not only natural science, but the sciences of literature, economics, and history. This, too, should be the object of Local Scientific Societies, they should be the centre of local science, and not only of science, but of pulsating social life.

SIR LESLIE MACKENZIE followed with a paper on "Science and Citizenship." He said that science is a holy wall against ignorance. Such facts as the discovery of the Piltdown jaw should excite the interest of all mankind. It should help us to realize our place in the scheme of creation. Nowadays millions of people know something quite definite of one or more sciences. Compared with the time when John Knox initiated his education campaign knowledge is widespread, but familiarity causes coldness of interest in truth for its own sake, partly owing to individuals not realizing the value of knowledge in promoting the higher human life. Science in technical crafts is being supported in the business world, but unfortunately as a money producing agency instead of for intellectual reasons. Also technical education has been supposed to have a very narrow meaning, though it should include social economics and management. Sir Leslie sees a steady growth in the quality of technical and scientific education, but not an equal one in the perception of ethical



and æsthetic values. It is difficult to make a living out of scientific study. He referred to the splendid programme of the Workers' Educational Association. Labour should accept the co-operation of all brain workers. Scientific Societies can assist in this.

MR. ANDREW EUNSON, Ex-President of the Edinburgh Trades Council, argued that Trades Unions were formed for specific objects and should not contribute to science outside them. What is the duty of an individual is not always the duty of the organization he belongs to, but Trades Unions ought to set up research. If members had scientific inclinations they should join local societies. Trades Unions cannot put their ideas into action but employers can. He appealed for a more scientific study of the present social and industrial problems. Never were the powers and means of production so great, and yet 6,000,000 were out of work in America and 2,000,000 at home. Statesmanship seemed bankrupt. Labour has been accused of "ca'canny," what have the Universities and their M.P.'s done?

In the discussion that followed I, being the godson of John Ruskin, felt obliged to traverse Sir Richard Gregory's statement about Mr. Ruskin. I pointed out the great assistance he was in aiding my father to develop science in Oxford, especially in the building of the museum.

The second session, September 13th, was devoted to a discussion on "Regional Surveys." It was made particularly interesting and valuable by an exhibition of maps, plans, and photographs illustrating how to carry out what it is to be hoped will be largely done.

PROFESSOR PATRICK GEDDES opened the discussion. He defined a "Regional Survey" as an enquiry into everything around them, natural and human, geography, geology, meteorology, plants, animals, man, anthropology, archaeology, psychology, economics.

MR. H. T. PEAKE, Newbury, said that it is necessary to define the region to be undertaken—a small parish or a county, and then proceed to investigate the evolution of man in the region and the past, present and possible future of the region.

MR. FRASER DAVIES explained the exhibits. Many of the maps and plans of small areas had been made by children. These maps and plans would show in after years the alterations of roads, fields, streets, etc. Photographs showed old buildings, cottages, etc., side by side with those recently erected, buildings, churches, etc., before and after "restoration."

PROFESSOR FLEURE said that old maps are not only interesting from an antiquarian point of view, but are of social interest present and future. The British Association ought to provide for the synthesis of such things. Local Societies should assist by collecting and showing all sorts of local maps, models and objects of interest.

MR. ALEXANDER FARQUHARSON said that a regional survey would promote a feeling of citizenship.

SIR FRANCIS G. OGILVIE urged that there should be diversity of attitude, subject, study, investigation, and mode of record.

The Conference decided to recommend another meeting next year, and that the co-operation of scientific societies, educational institutions, public libraries, museums, civic bodies should be asked for.

I trust that I may be pardoned for suggesting that the Royal Cornwall Polytechnic Society should endeavour to carry out some of the objects mentioned by speakers at this Conference of Delegates. The Royal Cornwall Polytechnic Society should be in the forefront of local science and the centre of culture and of "pulsating social life," as Sir Richard

Gregory says such societies should be. It could organize lectures and discussions on science in all its branches. It most certainly ought to undertake a regional survey of the fast changing district of Falmouth and its neighbourhood.

# Report of the Celtic Congress

At Douglas, Isle of Man, July 4th to 14th, 1921.

*By J. Hambly Rowe, M.D., delegate of the Royal Cornwall  
Polytechnic Society.*

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DEAR MR. JENNER,—

I duly went across to Douglas on July 5th, and stayed there until July 13th, and attended every meeting, morning, noon, and night, of the Congress. I enjoyed myself immensely and met a large number of very nice people.

There were many enquiries after Mrs. Jenner and yourself, particularly from Miss O'Farrelly, Mr. and Mrs. John, and Mr. E. S. Dodgson and Dr. Hyde. By the way, the latter (Dodgson) brought forward the matter of the Lucien Bonaparte MSS. in Welsh, Cornish, and Armoric in the Bilbao Provincial Library, and asked the President in the name of the Congress to ask for their restoration to England.

There was little in any of the papers that one could link up with Cornwall especially, except that Miss Dodds, in her paper on Celtic women of Ireland, claimed the Brontës. Had I an opportunity I should have contested that claim on the grounds that whereas the Bruntys of Ireland gave no evidence of ability in any way, the Branwells of Cornwall showed comparatively a large proportion of ability amongst the ancestors and collaterals and the three famous sisters. However, there were so many speakers, and time for discussion was lamentably short (after every paper), that I did not get half a chance.

Canon Quine's opening paper was too long and wandered a bit from its title and purport. It was, however, scholarly and showed a considerable amount of reading. "Some features of the Mediæval Celt," by Dr. Hyde, was, of course, scholarly, and Mr. Rhys spoke delightfully and with much literary charm on the foreign ingredients of Celtic Romance, pointing out Eastern analogies in the Mabinogion.

Mr. Lennox Robinson's "Contemporary Drama in

Ireland" was a lucidly given narration of the struggles in Ireland for the formation of a theatre and a body of players in Dublin, and the work of the native Irish dramatists, Singe, Gregory, and Yeates.

In place of Dr. M. Williams, Professor Timothy Lewis gave a most scholarly paper on "Continental Contributions to Celtic Studies," which is to be printed. He outlined the lives of Zeuss and Zimmer particularly, and dwelt on the work of Joubainville, Loth, and others.

Dr. Maclean Watt's paper on "Arthur" was racy and interspersed with those witty and humorous interludes which make him worth hearing. He claimed Arthur for Scotland, of course, in the teeth of the meeting, and when a day or two after I characterised his claim as audacious there was a round of applause.

M. Diverres's paper was read by Madame Diverres, as he was unable to attend. It was well received. Mr. Quayle's "Manx Folk Songs" was highly technical, though much lightened by some good singing, the air of "Oh, what if the fowler my blackbird hath taken," being encored.

The folk-song concert was quaintly entertaining and revealed much of the simple charm and humour with which the country folk in long-past days were endowed.

Saturday's excursion was excellent, Rushen Abbey, Rushen Castle and Craigheesh village and stone circle all being most interesting. The Gaelic service was well attended. I send you a copy of the service in Manx.

Monday's session opened with your paper, followed by some notes I had written asking for committees to be set up to deal with various subjects, e.g.: a Committee on the Admixture of other Races with the Celtic speaking Goidhels and Brythons should collect all the information extant in regard to such admixtures, compile a bibliography, and present a report to the Congress next year. A similar Committee should deal with folk music, another with Celtic philology, and so on.

I was followed by Prof. Davies's paper on the University of Wales and Celtic study, and as there was a strong contingent from Wales present, they collared the discussion pretty much.

Dr. Baudis's paper on the Czech language was difficult to follow. I am afraid I went out, as it was a very hot afternoon, and had a refreshing cup of tea and a smoke.

Mr. Kermodé's lecture in the evening was full of interest; stone circles, early forts and chapels and Manx crosses formed the staple.

Mr. MacAlister's paper on Celtic art did not come off, and Mrs. Kennedy Fraser gave an account of her Hebridean work. Miss John read a short communication from Mr. and Mrs. Hughes on Welsh folk songs. The Highland Mod was next discussed and a long morning's session ended.

The afternoon was occupied by Mr. Neil Ross's "Celtic Factor in Modern Scottish Literature," read by Mr. Shaw, and at its end the business meeting was held.

Messrs. John, Rhys Phillips, and Jordain were re-elected a triumvirate to carry on the work and arrange for as successful a congress as the present one was. Dublin was selected as the next place of meeting, and, if in three months they find themselves in Dublin unable to entertain us with comfort, then I hope it will be Cornwall, though America has a strong claim.

I put, of course, your suggestion of Penzance and June before the Congress in your paper, and in a preliminary business meeting of the Congress held in Mr. John's quarters at Fort Anne Hotel. No decision was taken as to an alternative place, the idea being that the Congress had decided to go to Dublin.

The evening concert was excellent.

Wednesday morning's paper by a young Welshman, Mr. J. F. Reece, was by far the most scholarly paper of the Congress. It was excellent in every respect and took up



Historical Economics from an entirely fresh point. Hitherto we had viewed English historical economics from the Anglo-Saxon standpoint. Mr. Reece gave most cogent reasons why it should also be viewed from the Celtic side.

He attributed the long-continued friction of the Celtic with the Anglo-Saxon section as due to different economic conditions and that Saxon and Celt reacted differently to the same environment, the one being a pastoral people, the other an agricultural community, and that whereas the Celtic laws were based on the possession of cattle, the Saxon was based on land tenure and values.

That the cause of most of the Irish trouble was the infliction of Teutonic land-law views on a community accustomed to Brehon laws. The Celt was a tribal person and owed service to the head of the clan, whereas the Saxon was a manorial person and owed service to the head of the manor. I think that is what he said as far as my memory may be trusted.

I left on Wednesday afternoon, after a strenuous holiday, which I very much enjoyed.

Some thought the Conference was too prolonged, but it was pointed out that it had been well attended. About 70 were present the morning your paper was read, and 40 heard Reece's paper.

The Congress will probably be shorter next year and the "trimmings"—excursions, and receptions and concerts—will probably be put on before and after the more serious work of the gathering.

The Welsh element predominated, Scotland being a good second, and Ireland third.

I read the telegram in Cornish which I sent you, and also read your postcard to the meeting. They were rather chary at the Post Office about sending the telegram, but I told them the war was over.

Yours faithfully,

J. HAMBLEY ROWE.





WILSON LLOYD FOX, F.R. Met. Soc.  
President of the Royal Cornwall Polytechnic Society, 1922.

# Portrait Gallery of the Royal Cornwall Polytechnic Society.

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WILSON LLOYD FOX, F.R. Met. Soc.,

PRESIDENT, 1922.

VICE-PRESIDENT. 1885 to 1887.

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Wilson Lloyd Fox, of Carmino, Falmouth, was born at the family residence, Wodehouse Place, Falmouth, on the 27th January, 1847. He was the sixth son and eleventh child of the late Alfred Fox, of Wodehouse Place, and Glendurgan in the Parish of Mawnan, and of Sarah, his wife (née Lloyd, of "Farm," near Birmingham). He attended a day school kept by Mr. Lovell Squire, a Minister of the Society of Friends, at Kimberley Place, Falmouth, who on his retirement became the private tutor of the children of the late Mrs. Jane Gurney Fox, the widow of the late Robert Barclay Fox, at her residence, Roscrow, in the parish of St. Gluvias. He was allowed to share in their education from 1860 until January 1862. His education was continued at the Friends' Boarding School at Tottenham, London, N. After passing the matriculation and first LL.B. examinations of the University of London he was articled in October, 1864, to the late Tobias Harry Tilly, of 41, Church Street, Falmouth, and Tresooth, in the Parish of Budeock, as a solicitor and notary public; on whose death in October, 1866, the Articles were transferred to Mr. Tilly's son, the late Harry Tilly, with whom he became a partner in 1871. The partnership was dissolved on 31st December, 1885, after which he continued in practice until 30th June, 1907. He succeeded the late Harry Tilly as Registrar of the Falmouth County Court, receiving

the appointment from His Honour Judge T. C. Granger (now Sir Thomas C. Granger) in 1894, and relinquishing it in October, 1917.

On the 7th September, 1876, he married Augusta Mary, eldest daughter of the late Mr. and Mrs. Reginald Rogers, of Carwinion, Mawnan, at the Mawnan Parish Church. This lady died on the 9th October, 1889. In 1889 Mrs. Reginald Rogers (mother of his late wife Augusta Mary) and her family joined with Wilson Lloyd Fox in presenting the sum of two hundred pounds to the Royal Cornwall Polytechnic Society in order that the balance due on the building account of the new Observatory might be discharged. The gift was in the nature of a Memorial to the memory of one who was much beloved by all who knew her. The following inscription was subsequently placed on a polished granite stone fixed opposite to the foundation stone of the Observatory:—

“In Memory of Augusta Mary, wife of Wilson Lloyd Fox, F.R. Met. Soc., died 9th October, 1889.”

He married secondly at the St. Austell Parish Church, in 1898, Constance Louisa Grace, second daughter of the late Rev. Canon Saltren Rogers, of Tresleigh, St. Austell. On the 23rd August, 1898, a wedding gift consisting of an illuminated address in carved wood covers and an antique bureau, subscribed for by a wide circle of friends, was presented to him at the opening meeting of the Annual Polytechnic Exhibition by Dr. John Gott, the Lord Bishop of Truro. The address concluded with the words:—

“That wind and weather, sunshine and rain, which the Institution records with unswerving fidelity, may combine to make life prosperous and happy to Mr. and Mrs. Fox, is the hearty wish of one and all.”

He is a Life Fellow of the Royal Meteorological Society; also a Life Member of the British Association, and of the British Astronomical Association; also a Past Registrar of

the Provincial Grand Lodge of Freemasons of Cornwall. He was a President of the Falmouth Naturalist Society, whose meetings were held in the Polytechnic Hall, 1888-1899; also for several years a member and Vice-Chairman of the Falmouth School Board until its termination on 29th June, 1903. It was superseded by the Falmouth Educational Authority, of which he became a member and Vice-Chairman. For many years he has acted as one of the managers of the Technical Education Classes, originally held in the Polytechnic premises until their removal to the Municipal Buildings in 1896, and subsequently to the Old Grammar School; also of the Falmouth Art School, which was erected as a Memorial to the late Miss Anna Maria Fox, of Penjerick, the foundation stone of which was laid on the 19th August, 1901, by Lord St. Levan. He served for several years on the Council of the Falmouth Chamber of Commerce, and at one time acted as Chairman. In 1909 he was appointed a Justice of the Peace for Cornwall. From 1910 to 1914 he acted as President of the Falmouth Club, and in 1915 was elected President of the Falmouth Philharmonic Society.

His connection with the Royal Cornwall Polytechnic Society dates back to the year 1860, when he won a prize of £3—offered by the late Mrs. Jane Gurney Fox for “Observations on Natural History.” He became a member of the Society in 1865, and joined the Committee in 1877. His co-operation in the various activities of the Society and notably his practical interest in the work of the Falmouth Meteorological and Magnetical Observatory (of which he became Honorary Secretary in 1877 and has so continued to the present time), has been unceasing. In 1882 he published “An Historical Synopsis of the Royal Cornwall Polytechnic Society,” for the fifty years 1833 to 1881. This was reprinted in 1914, with a second part, bringing the history of the Society down to 1913. It contains a very full account of the Society year by year, lists of



Presidents, Vice-Presidents, winners of prizes and medals, lectures and papers, honorary members, life members, etc., and catalogues of portraits, paintings, busts, etc., in the possession of the Society, or appearing in its Annual Report. He received a Complimentary First Silver Medal and a bound copy of the Annual Report in recognition of his services during the Jubilee Exhibition of 1882. In 1885 he became a Vice-President and presided at the annual meeting of the following year. In 1915 he was elected an Honorary Member, and at the annual meeting held on 16th February, 1922, he was unanimously elected President.

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## SIR WILLIAM HENRY PREECE, K.C.B., F.R.S., LL.D.

VICE-PRESIDENT, 1904 to 1906. PRESIDENT, 1901 to 1903.

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William Henry Preece was the eldest son of R. M. Preece, of Bryn Helen, Carnarvon. He was born on the 15th February, 1834. Educated at King's College, London, he began his scientific career in the office of Edwin Clark, M.Inst.C.E., at the age of eighteen, and in the following year was appointed to a post in the Electric and International Telegraph Company. At two-and-twenty (in 1856) he became Superintendent of the Southern District of that Company, and from 1858 to 1862 he was engineer to the Channel Islands Telegraph Company. In 1860 he was in the telegraphic service of the London and South-Western Railway Company, and in 1870, when the telegraphs were taken over by Government, he was transferred to the Post Office as Divisional Engineer. He was appointed Electrician to the Post Office in 1877, and from 1892 till his retirement in 1899 was Engineer-in-Chief and Electrician. In 1898-99 he was President of the Institute of Civil Engineers, and to the end of his life he was Consulting Electrical Engineer to the



SIR WILLIAM HENRY PREECE, K.C.B., F.R.S., LL.D.  
President of the Royal Cornwall Polytechnic Society,  
1901 to 1903.



Colonies. He received the order of Knight Commander of the Bath in 1899. In 1864 he married Agnes, daughter of George Pocock, of Southampton, by whom he had four sons and three daughters. She died in 1874.

It will be seen from his various appointments during a long life that Sir William Preece's special line of engineering was in electricity and telegraphy. In these he was very eminent, his many inventions and improvements did much towards perfecting telegraphy, and he was joint-author of two noted text-books, one on telegraphy and one on telephony. It is not easy for one who is quite ignorant of the subject to form an estimate of his work, but it is probably not too much to say that at one time he was the most eminent telegraphic engineer in the country, if not in the world. But there was another side to his activities. He was by birth a Welsh-speaking Welshman, and when the Celtic Association was founded in the early years of the present century, he was a very enthusiastic and valuable member of the committee, many meetings of which took place at his offices in Queen Anne's Gate.

Sir William Preece was elected an honorary member of the Royal Cornwall Polytechnic Society in 1882, President in 1901 to 1903, and Vice-President from 1904 to 1906. During his term of office as President he gave three addresses, one in 1901 on "Terrestrial Magnetism," a remarkably interesting paper, historical as well as scientific, and two in 1902, one of which was "On the Educational Value of Public Exhibitions," and the other on "Wireless Telegraphy," then a very new subject, but now sufficiently developed to threaten to become a nuisance, if one may say so of any scientific invention, to peaceable people. He was especially interested in the magnetic work of the Observatory and was Chairman of the Falmouth Magnetographs Committee of the British Association for several years. He contributed two short papers to the Reports of the Falmouth Observatory, one in

1901 on "Magnetic Storms" with a reproduction of curves taken at Falmouth in the storm of February 13th, 1892, and the other on the magnetic storm of October 31st and November 1st, 1903.

He died on November 6th, 1913.

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**SIR JOHN ST. AUBYN, Fifth Baronet,  
F.R.S., F.S.A., M.P.,  
VICE-PRESIDENT, 1835.**

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The earliest recorded ancestor of the St. Aubyn family appears to be Sir Mauger de Sancto Albino, who was living in the time of King John, but the name is evidently of French origin, derived from some place called after St. Albinus, who was Bishop of Angers in about 550, so that it is not improbable that the appearance of a St. Aubyn in that rather apocryphal work, the Roll of Battle Abbey, has good foundation, and that an original ancestor really did "come over with the Conqueror." There is not much to show where he came from, but family tradition seems to point to St. Aubin-du-Cormier or St. Aubin-d'Aubigné, two places not very far apart a few miles north of Rennes in Brittany. There are a large number of other places of the name in Brittany, Normandy and Anjou, and one in Jersey. The St. Aubyns settled first at Berryn-Arbor and Paracombe, in North Devon, not far from Ilfracombe. In 1439 John de St. Albyn, the representative of the elder line, married Joan, daughter and heiress of Richard Popham of Alfoxton, in the parish of Stringston in Somerset, about nine miles to the west of Bridgewater. Ten generations later the last male heir of the older line, the Rev. Lancelot St. Albyn of Alfoxton, died in 1791, and was succeeded by his great-nephew, Langley Gravenor, son of St. Albyn Gravenor, whose mother was Elizabeth St. Albyn, sister of the aforesaid



SIR JOHN ST. AUBYN, 5th Bart.  
Vice-President of the Royal Cornwall Polytechnic Society,  
1835.





Lancelot. Langley Gravenor assumed the name and arms of St. Albyn. He died in 1863, leaving two daughters, Caroline, who married William Savage Wait, of Woodborough, Somerset, and Anne, who in 1847 married Birt Wyndham Rous Jenner, sixth son of Robert Jenner, of Wenvoe Castle, Glamorgan, whose son, Birt St. Albyn Jenner, born 1849, inherited Alfoxton and was the last descendant of the older branch of the St. Albyns or St. Aubyns.

Towards the end of the fourteenth century Geoffrey, a younger son of Sir Guy de St. Albyn of Paracombe, who was father or grandfather of the John de St. Albyn who married the heiress of Alfoxton, married Elizabeth, daughter and heiress of Peter de Kemyel of Clowance, and became the first St. Aubyn of Clowance. The seventh in descent from this Geoffrey, John St. Aubyn of Clowance, purchased St. Michael's Mount in 1657, from Sir Arthur Basset, to whose father, Sir Francis, it had been granted by Charles I. This John died in 1684. His son John was created a Baronet in 1671-2. His grandson, Sir John St. Aubyn, the third Baronet, represented Cornwall in Parliament from 1722 to 1744.

The arms of the Somerset and Devon St. Albyns are: Ermine, on a bend sable, three bezants. Those of the Cornish St. Aubyns are: Ermine, on a cross gules, five bezants. As the bezants come into the arms of both branches, it is improbable that they have anything to do with the arms of Cornwall, but it is quite possible that the ermine field, a rather uncommon one, does commemorate the Breton origin of the family. The shield of the Duchy of Brittany is plain ermine with no other charge; the crest is an ermine passant, and the badge a single "ermine spot."

Sir John St. Aubyn, the fifth Baronet, was the only son of Sir John, the fourth Baronet, and Elizabeth, daughter of William Wingfield. He was born on the 17th May, 1758,

and succeeded his father in 1772. He was educated at Westminster School. At the age of twenty-six he was elected M.P. for Truro (1784), but appears to have represented Penryn from the same year to 1790. In 1790 he unsuccessfully contested the county as a Whig, and later, 1807 to 1812, represented Helston. He was elected a Fellow of the Society of Antiquaries in 1783, and of the Royal Society in 1797. He was also a Fellow of the Linnean Society and of the Geological Society. He took a considerable interest in natural science and made a great collection of minerals. From 1785 to 1839 he was Provincial Grand-Master of the Freemasons of Cornwall. He married Juliana, daughter of — Vinnicombe, and died at Lime Grove, Putney, on 10th August, 1839. Judging from the portraits of him, of which there are several at St. Michael's Mount, he was a remarkably handsome man, and he was undoubtedly a man of great ability, who took an important part in Cornish affairs during a great part of his long life. His connection with the Royal Cornwall Polytechnic Society was short, for he was seventy-five years of age when it was founded, and he is not recorded as having taken any part in its management, except being a Vice-President, to which office he was elected in 1835, and he did not contribute any papers to the Reports.

# A Glossary of Celtic Words in Cornish Dialect.

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In Use since 1800.

*Gathered from books and from living speech.*

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N.B.—Words enclosed in square brackets, [ ], do not occur in MSS.; words in italics otherwise undistinguished are Cornish; W. denotes Welsh, B. Breton words: E.D.D. *English Dialect Dictionary*. Space has not allowed mention of the source of each word, but those found only in Polwhele's Glossary, 1836, have his name appended; others are accredited to certain persons who have supplied them, and rare or local words are given with their place of origin. A great many words collected by myself or given to me by a collector who wishes to be anonymous will be found in the last category.

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AGAR. Ugly (Zennor). *Hagar, W. hagr, B. hagr.*

AGAREVER. A pollack (Marazion). *Agor rever*, "open-breech," W. *agor, rhefr*, B. *egori, verr*.

AKE. A groove made on the stone of a killick (Mousehole). Cf. W. *ag*, a cleft.

ALLYCUNPOOSTER. All right (Camborne). *Ol en composter*, all in order, W. *cymhwysder*, B. *kompoezder*.

AREAH, AREAR, AREE FAA. An exclamation of surprise. *Rea, reva*, astonishing, strange, W. *rhyfedd*. This is sometimes difficult to distinguish from the exclamation *Re Varia!*, By Mary!

BAL. A pest, used figuratively. W. *ball*.

BAL. A mine, *Palas*, to dig, W. *palu*, B. *pala*, from *pál*, a shovel, *dho balas*, to dig.

BANNEL. The broom plant. *Banal*, *banathel*, W. *banadl*, B. *banazl*, *balan*.

BISKAN. A finger-stall. *Biscan*, W. *byswain*, B. *besken*.

BITS. Spinach-beet, green beet-leaves. Cf. W. *betys*.

BORBAS. A rockling (Newlyn, Mousehole). *Barres*, bearded, from *barr*, W. *barf*, B. *barr*. A cod was called *barfus* in Cornish; the same name. See PEDN-A-BORBAS.

BOTHEL. A blister (Polwhele). W. *pothell*.

BOTHACK. The blind or bib (Mousehole). *Bothak*, blistered, swollen, W. *bothog*, with allusion to the films puffed out over the fish's eyes when taken from the water. Borlase wrongly gives this name to the bream.

BOTHACK. A hunchback (Mullion). *Bothak*, having a hunch or boss, W. *bothog*.

BOWJY. A cattle-house. *Bowjy*, W. *beudy*, from *beugh*, a cow, W. *burch*, B. *buc'h*, and *chy*, a house, W. *ty*, B. *tì*.

BREAL. A mackerel (Mount's Bay, St. Ives). *Brithel* (the *th* silent), W. *brithyll*, a trout, B. *brezel*, a mackerel, from *brith*, spotted. This survives especially in the "mackerel chant,"—" *Breal, a mata, truja, peswara, pempes, whethes*, all aserawl, all along the line—o, boys!"—of which the greater part is known by many fishermen at Mousehole, Newlyn, St. Ives and Porthleven.

BRINK. The gills of a fish (Mount's Bay, St. Ives). B. *breūk*.

BROZE. A blaze, a great heat. *Brôs*, hot, boiling, W. *brud*, B. *broul*.

BROWJANS. Small fragments. *Browsion*, *browjion*, fragments, W. *brionsion*, B. *brochen*. See BROWSE, the singular form.

BROWSE. Pulped bait (Mount's Bay). *Brewes*, broken, W. *brivys*, a crumb, from *brwy*, to break, W. *brivo*, B. *breva*.

BRUMMAL-MOW. An arish-mow of domed form. *Bar moel*, "round top," W. *bar moel*, B. *bar moal*. This name is sometimes given now to the PEDRACK MOW, qv., the name of which seems to be lost.

BRUYANS, BREWIONS. Crumbs, fragments. *Brewion*, W. *brivion*, B. *brien*. See the related words BROWJANS, BROWSE.

BUCCA. An imp, a hobgoblin, a scarecrow, a fool. *Bucca*, W. *bwca*, *pwca*.

BUDDY. A cluster, a clump. Cf. B. *bôd*, *bôdud*, *bôden*, with similar meanings.

BUFFON. A bruise. Cf. W. *paff*, a lump, *paffio*, to thump, and Cornish *clot boffan*, tripe, where *boffan* seems to mean "lump."

BULGRANACK. The smooth blenny (Mount's Bay). Unless a variant of MULGRANACK, which seems likely, this is *polgronak*, "pooltoad," from *pol*, W. *pell*, B. *poull*, and *cronak*, a toad.

BULORN. A common snail, but one of large size and having a grey shell. Cf. Ir. *ballán*, a shell, pronounced "bullawn."

BULLY. A pebble. Cf. B. *bili*.

BULUGAN. An earthworm (Mousethole). *Bulligan* (Borlase), B. *buzugen*, *buc'hugen*.

BUNNY, pl. BONNYES (Borlase). A bunch of ore. W. *bon*, a stock, a base, B. *bonn*.

BURGAM. A jocular term of reproach (Gwinear, per Miss M. Vivian). *Bergam*, "crookshank," "bandy-legged," W. *bergam*; *ber*, shank, and *cam*, crooked.

BURN. A load, as much turf, furze, etc., as one can carry; of hake or pollack, twenty-one fish. "Burn" is a dialect form of English "burden"; but we also have Cornish *bern*, a load, W. *burn*, B. *bern*.

BUSSA, BUZZA. A large preserving-pot. *Bûs-seath*, food-pot; the *th* silent. *Bûs*, W. *bryd*, B. *boued*, food, and *seith*, *seath*, a pot, W. *saith*.



**CABESTER, COBESTA.** The part of a fishing tackle connecting the hook with the lead (Mousehole). *Cubester*, a halter, *W. cebustr*, *B. kabestr*.

**CABOOLEN, CABOOLY-STONE.** A holed stone, tied to a rope, and used to drive pilehards or mackerel back from the opening of a seine (Mount's Bay). Cf. *W. cybol*, grasping, holding, and also *cabolfuén*, a sleek-stone, a smoother, which from its shape may have been used for this purpose.

**CACK.** Filth. *Cágh*, *Cák*, ordure. *W. Cach*, *B. Kac'h*. See CAUCH.

**CAGGLE, GAGGLE.** To bemire. Cf. *W. eaglu*, to bemire, from *eagl*, *B. Kagal*, dirt, which as Cornish would be *eagla*, and by mutation *gagla*.

**CAL.** Tungstate of iron. *Gal*, rust.

**CALAMAJEENA, CALAVAJINA.** A thornback (St. Ives). *Carlath* (Lhuyd). + "majeena," perhaps *meginow*, bellows, from the shape.

**CALCAR, CALKEN, CALICAN.** The lesser weever, also the father-lasher, both "sting-fish." Cf. *Ir. calg*, a sting, *calgach*, prickly.

**CALLAN.** A hard layer on the face of a rock (St. Just). Probably from *cals*, hard, *W. caled*, but cf. also **CAL**.

**CAND, CAM.** Fluor spar. *Can*, white, *W. can*, *B. kann*.

**CANKER.** A harbour crab. *Canker*, *B. kankr*.

**CANNIKEEPER.** A spider-crab (Porthleven). Perhaps *canker-hir-baw*, "long-claw crab"; SEE PAW.

**CANTER.** A frame for a fishing-line (Newlyn, Mousehole, Sennen). Originally a peg would be used for the purpose, Cornish *kenter*. *W. cether*. *B. Kentr*, the same word, are used of a spur.

**CARE.** The mountain-ash (Liskeard, Polwhele). *Kerdhen*, *W. cerddin*, *B. kerzen*. Cf. also *W. cair*, berries.

**CARN.** A pile of rocks. *Carn*, *W. earn*, *B. karn*.

CARN TYER. Quartz. Perhaps *can dîr*, white ground, unless *can tîr*, rock ground.

CARRACK. A stone composed of quartz, schorl, and hornblende. *Carak*, a rock, W. *careg*, B. *Karrek*.

CASSABULLY. Winter cress. *Cas beler*, "nasty cress," W. *cas berwy*, B. *kas beler*.

CASTEEG. To flog. Cf. W. *cystegu*, to afflict, *cysteg*, trouble.

CAUCH. A mess, *Câgh*, ordure. W. *cach*, B. *Kac'h*, See CACK.

CHEA CHAUNTER. CHEECHONTER. Stop your chatter! Here *chea* is for *taw*, be silent!, W. *thw*, the *t* become *ch*; unless the phrase should be rendered CHEE CHANTER!, Thou chatterer! where *chee chee* is a late form of *tî*, W. *tî*, B. *te*; "chanter" is English.

CHEWIDDEN DAY. A miner's festival. *Jeu widn*, white, or blessed, Thursday.

CHEEL'-AN-JEWAN. Poor child! (Halsetown, per Mr. H. Jenner). "Child" *an dewhan*, child of the grief, W. *tuchan*, *tuch*, *duch*, *dych*.

CHEEL VEAN. "Little child," an endearment. "Child" *vîan*, W. *bychan*, B. *bihan*.

CLAMMED, CLAMoured. Out of health (Polwhele). *clamder*, a swoon, from *clar* + *der*, "sick" + "ness." W. *claf*, B. *klanv*.

CLAWDY. Fish entrails, used as bait (Truro river, per Major J. S. Henderson). Cf. W. *coluddion*, entrails.

CLEETA. A taboo-name for a church tower; unlucky to name at sea. *Cleghty*, "bell-house," W. *clockdy*.

CLEG. A razor-fish (Mousehole). [*Kelig*] *Keligan*. cf. B. *Kellilik*, a little knife, in Cornish form [*Kelig*].

CLICKY, CLICK-HANDED. Left-handed. *Clik*, a contraction of *cledhek*, left, W. *cledd*, B. *kleiz*: to which in Cornish is added the adjectival suffix *ak*.

CLIZZARD. A sand launce. Perhaps *clledha*, a sword, W. *clleddyf*, B. *klézé*. Cf., also, W *claddwr*, a digger, B. *kluzer*.

CLUT. A gap in a hedge. *Cluid*, older *cluit*, a hurdle. W. *clwyd*, B. *Kloued*.

CLUNK. To swallow. *Lenky*, W. *llyncu*, B. *lounka*; unless this is like W. *cyflwng*, swallowing up, in Cornish form [*collunk*] with a verbal form [*collunka*]=*klunka* (Borlase).

COCK-AN-BAWBA, COCKEN BARBER. A toy boat of cork with chip sails (St. Ives). *Cok an baban*, "boat of the child," or *coken babyow*, "little boat of the children."

COCK DAYKA. A term applied to a COCK-AN-BAWBA, q.v., that sails very well. *Cok teca*, "prettier boat"; or *cok decu*, "tithe boat," the latter with the suggestion of a propitiatory use, as an offering to the sea.

COCKDOLLAR. To let fly with the heels; of a donkey. *Cók dyllo*, to let fly blindly. W. *coeg*, *dylhwng*.

CODNOR. Stew. *Cona*, later *codna*, to sup, W. *cwynosa*. B. *koania*.

COFFEN, GOFFEN. An open mine-work. Cf. W. *cafnu*, to hollow out, *caf*, a cave, B. *Kav*. [*Cofen*], a hollow, being fem. would after *an*, the, be [*gofen*].

COLE. A cuttle-fish. *Collel*, a knife, W. *morgyllell*, sea-knife, cuttle-fish. Ray spells this as "call." See GOYLE.

COLPAS. A fulcrum. W. *colpes*, a pointed edge.

COL PERRA. A word connected with Shrove Tuesday "lent-croeking" (Landewednack). *Towl perow*, "a throwing of croeks," *Towl*, *tol*, a cast, a throw, and *perow*, pl. of *pêr*, a kettle, a crock, W. *paür*. See COWL ROOZ, TOLA ROOZ. The change of *t* to *c* in *col*, *cowl*, is a corruption of recent date, and not a mutation.

COOMB. A valley, *Câm*, W. *cwm*, B. *kamb*.

COOZE, COUZEY. To chat. *Cousa*, *keusel*, W. *commio*, B. *komza*, *kuozeal*.

COR-CRI. A criss-cross (St. Just). *Crows Críst*, cross of Christ ; unless *corf Críst*, body of Christ.

CORE. A shift or term of work. *Câr*, a limit, W. *cwr*. B. *ker*.

CORNIWHILLEN. A lapwing (Polwhcle). W. *cornchwiglen*.

COSSEN. To re-steel an edge or point of an iron tool, [*Kesewna*], to make right together, W. *cyd*, *iawnu*, B. *ked. euna*.

COSTAN. A basket, made of twisted straw as weft, and split bramble-canes as warp (Zennor, Morva, St. Just). *Costan*, a buckler. Bucklers for single-stick play were of straw and bramble-cane, as archery targets are still made.

COSTEAN. To examine the back of a lode by digging pits. *Cawas stean*, to find tin, W. *caffael ystaen*, B. *kaffout stean*.

COWAL. A back-basket, carried by fish-sellers. W. *cawell*, a basket, B. *kavel*.

COWL. A gut, of a fish (Mousehole). *Cowl*, stomach, W. *caul*, B. *goell*.

COWLECK. A glutton. *Cowlak*, from *Cowl*, q.v., with adjectival suffix, *ak*.

COWL ROOZE. "Cast net !," a command in seining (St. Ives), *Towl rûs*. "Cast thou net !," W. *tawlu*, *rhwyd*, B. *taola*, *rouez*. See COL PERRA, TOLA ROOZ.

CRAFE. To mend with rough stitches. W. *craffu*, to secure, B. *kraf*, to stitch.

CROME. To creep. *Cramyas*, B. *skrampa*.

CRAWN. Skin. *Croen*, W. *croen*, B. *kroc'hen*. In CROWDY-CRAWN. q.v.

CREAG. A cavity in rock (St. Just). [*Crîg*], a crack, W. *crig*.

CREAGLE. A spider crab. See GRIGGLE.

**CREASE.** The middle part of a <sup>3</sup>buddle, in tin-dressing (St. Just). *Crês*, the middle, W. *craidd*, B. *kreiz*. In Pryce's time the buddle was divided into *pednan*, *creaze* and *last*, head, middle and tail.

**GREEN.** Of stone, to shale away (St. Ives). Cf. W. *crino*, to become brittle, B. *krina*.

**CREEVED.** Half-baked. underdone. *Crîv*, raw, W. *cri*, B. *kriz*.

**CRELLAS.** A hut : often an excavated one. Perhaps [*cregh eles*], roughly built, W. *crych*, rugged, rough, *elîo*, to build. [*Eles*] seems to be kept in *Carn mên eles*, carn of built stone.

**CREVAN.** A dry crust. *Creven*, W. *crasfen*, B. *kreuen*.

**CRIB.** To break bits from the edge, as of a flint. Cf. W. *crip*, a notch.

**CRIBBAGE-FACED.** Wrinkled. Cf. W. *crybwch*, *crebach*, wrinkled, shrunk, *crepog*, withered.

**CRIBBLE.** To fray out. *Criba*, to card wool, W. *cribo*, B. *Kriba*.

**CRICKMOLE.** A somersault. Cf. W. *crychlam*, a caper. In Cornish perhaps [*creghlemmal*], to take a rough or extreme jump.

**CRIG.** A round mow of corn. *Crîg*, a mound, W. *crug*, B. *Krugel*.

**CRINION.** Barley Bran (St. Just). Cf. W. *crin*, dry, brittle, B. *krin*. *Crinion* is a pl. form.

**CROGGAN.** A limpet-shell. *Crogen*, a shell, W. *crogen*, B. *krogen*.

**CROOP.** A stoop. W. *crwb*, a hunch.

**CROW.** A hut. *Crow*, W. *craw*, B. *kraou*.

**CROWDER.** A loiterer. W. *crwydryn*.

**CROWDLE.** To loiter. W. *crwydro*.

**CROWDY CRAWN.** A sieve-rind with a sheepskin bottom (Lelant, Zennor). *Crodar croen*, "skin seive," W. *cruitr*, B. *Krouzer*, a sieve ; W. *croen*, B. *Kroc'hen*, a skin.

**CROW-SHEAF.** The topmost sheaf of an arish-mow. W. *crewyn*, the last load of corn.

**CRUM.** Crooked, cramped with cold. *Crom*, crooked, W. *crum*, B. *kroumm*.

**CRUM-A-GRACKLE.** A bother, a difficulty (St. Just). *An cromma graghel*, "the crookedest pile," a metaphor of "bal maidens," referring to a pile of ore. See **CRUM**, the positive of *cromma*. B. *grac'hel*, a heap, preserves the guttural that in the dialect form, "grackle," has become *k*.

**CUDRIDDEN.** A disturbance (St. Just). *Codridn* may=W. *godrin*, bustle, conflict, but seems nearer to *cydrin*, a dispute together, from *cy*, together, *trin*, trouble, battle. If so, an older Cornish form would be [*kedrin*], and this [*kedridn*].

**CUFFAN.** A hen-crab (Mullion). Suggestive of B. *Kefniden-rôr*, "sea-spider," a lobster ; but more probably connected with W. *cyff*, B. *kef*, a stock, in the sense of origin.

**CULFER.** Damage done to a crab-pot (Porthleven). To pummel (St. Just), *Coll fir'*, loss of shape, W. *coll ffurf*. B. *koll furm* ; or like Welsh *cwlff*, pl. *cylffau*, a lump, a shapeless piece.

**CULFERAS.** An ungainly person (St. Just). See **CULFER**.

**CULIACK.** A worthless person (Zennor). *Câl*, lean, or *col*, chaff, beards of corn, with adjectival suffix *ak*.

**CUPLAW.** An arrangement of two hooks, one over another. *Coplow*, pl. of *copel*, a couple, W. *cuapl*, B. *koubl*.

**CUSKEY.** "Sleepy," of rotten wood (St. Just). *Cusk*, sleep, W. *cwsg*, B. *kousk*.

**CUSTANCE.** An expression used in playing marbles. Cf. W. *cysturyo*, to chastise, whence in Cornish form, [*Kestians*], chastisement.



CUSTIS. An instrument of punishment, a chastisement W. *cystuyad*, in Cornish form, [*Kestias*], B. *Kastiz*.

CUZZAL. Deceitful, smooth-spoken. *Cusal*, soft, W. *cysawl*, from *cysu*, to assuage.

DABBETY FAY! A pious exclamation. *Yu da pejy fay*, "It is good to pray for faith," seems a very possible origin.

DAFFER. Table-ware : tea-things. *Dajfar*, preparation, a utensil, W. *dof*, a thing for use, B. *dajfari*, to prepare.

DAGWEL. Something very bright—"shining like dagwel." (Newlyn, Mouschole). *Tég wel*, a fair sight, W. *tegwel*, fair to see, is nearer in sound than *tég houl*, fair sun.

DALVA. A row, a quarrel (St. Just). This seems to mean literally a fronting, *talva*, W. *talfa*, a projection, from *tál*, front, and *ma*, place. Being fem. this after *an*, the, would be *dalva*.

DAME-KU. A jack-snipe. *Dama kiogh*, "mother of snipe." W. *giach*. B. *kioc'h*.

DAMON HERRING. An allis shad. *Dama 'n hern*, "mother of the pilchards."

DASH. An unbound faggot of furze. *Tas, das*, a stack, a mow, W. *tas, das*, B. *dastum*, See GULDIZE, TASH.

DASH-AN-DARRAS. A stirrup-cup. *Dewes an darras*, "drink of the door"; unless it is from the Irish, *deoch an doruis*, Manx *jough yn doris*. As the phrase does not exist in Welsh or Breton it seems less likely to be Cornish; but it has approximated to the Cornish form.

DEEN. The end of a level. *Tin*, a tail-end, W. *tin*; *an din*, the tail-end.

DEKA. "A tithe"; cried by fishermen, formerly, as each tenth basketful was counted. *Deka, dega*, a tithe, W. *degem*, B. *deog*, from *dek, dég*, ten. W. *deg*, B. *dek*.

DICKLYDIZE. A harvest supper. *Degol deis*, feast of ricks, W. *dygwyl deisi*. A variant, DIGULTHISE, is *degoldheis*, a compound form. See GULDIZE, DUGGLE.

DILLUE. To wash ore, using a hair sieve. *Dyllo*, to let go. W. *dyllwng*, B. *diloc'ha*.

DIZZUE, DIZZO, DYZHUE, DYZHA. The "deads" of a lode, the portions containing no tin ; properly to remove the "deads" from a lode. See ZEW.

DOG. To drag, used especially of timber. *Degy*, to carry, W. *dygu*, B. *douga*, of which the 2nd pers. sing. imp. is *dôg*, W. *dwg*.—*Dôg an predn-na* ! " Drag thou that tree ! "

DRAFFA. A disappointment, literally a thing arising. *Draffa*, *dereffa*, to arise, W. *dyrchafu*.

DRETHAN. A sand-patch on the sea-floor (Mousehole). *Trethen*, a sand-bank, W. *traethen*, B. *tréazen* ; *an drethen*, the sand-bank.

DRIZZLING DOUR. A small stream. " Drizzling " (English), trickling, *dour*, water, W. *dwjr*, B. *dour*.

DROKE. A groove, a furrow. *Trôgh*, a cut, W. *trwch*, B. *trou'ch*. The guttural *gh* becomes *k* in dialect form.

DROOJY, DROOGE, DRUSELING, DREUZEN. A fool, foolish. B. *drujul*, to fool.

DROZE. A murmur (Mousehole). *Trôs*, a sound, W. *trwst*, B. *trouz*. See TROZE, of which this is a mutation.

DRUSY. Crystallized, covered with crystal. *Grueys*, *gury's*, crystal. *Gwyn avel grueys*, or *gwyn avel crystal*, "white as crystal," was a favourite Cornish comparison. The change of initial here is a late corruption and not due to mutation.

DUGGLE. A miner's feast. *Degol*, *dugol*, feast-day, W. *dygwyl*, from *dé*, a day, W. *dydd*, B. *dez*, and *gol*, a feast, W. *gywl*, B. *goel*.

DURGY. A hedge of turf. *Dorgê*, an earth hedge, from *dôr*, earth, W. *daiar*, B. *douar*, and *kê*. See GURGO.

ELICK. A red gurnard. *Ellek* ; *illek*, cf. B. *ellek*, spurred. " Rudelleck," "redlaneck," are variants having "rud," red, prefixed, which may be Cornish *rûth*. W. *rhudd*, B. *ruz*.

ELVAN. Porphyritic rock. Cf. B. *elven*, a spark, element, W. *elfen*.

FACKLE, FECKLE. Inflammation in the foot. W. *ffagl*, flame, which as Cornish would be [*fakel*].

FAIR MO. A fair at St. Ives. *Fér mógh*, pig fair, W. *ffair*, *moch*, B. *foar*, *mó'ch*.

FLAIR. An unpleasant smell. *Fleyr*, W. *fflair*, B. *flear*.

FLEECHY. Apt to run in baking ; of dough. Cf. W. *fflychio*, to break out suddenly, *fflwch*, quick.

FLOOKAN. Ground cutting one part of a lode from another. W. *fflochen*, a rift, from *ffloch*, abrupt ; in Cornish form [*floghen*].

FLORAN. Very fine tin stuff, W. *fflwr*, fine meal. [*Floren*], in Cornish, is probably a diminutive of *flúr*, corresponding to the Welsh.

FOGO, FUGGOE. A cave. W. *ogof*, B. *mougeo*. See GOOG, HUGO, VUG.

FORKEL. Forked ; also an iron fork to hold a boat-lantern. Cf. W. *fforchol*, forked, and B. *forc'hel*, a little fork ; either in Cornish might be [*forghel*].

FROZE. 1. A tide-race, a current (Mousehole). *Fró's*, a tide, a stream, W. *ffrud*, B. *froud*.

FROZE. 2. A row, a disturbance. W. *ffrawd*, a commotion.

FUGGAN. A miner's dinner cake. W. *chwiogen*, a cake, B. *c'huystochen*. A variant of HOGGAN, q.v., in which the guttural *wh* of [*whiogen*] has become an *f*. Cf. B. *fero*, bitter, a form of *c'houero*, W. *chwerw*.

FUN. A small kind of rush. Cf. W. *ffun*, a bundle, *ffunennu*, to bind ; such rushes were used to make sheep-spans.

FURRY-DAY. The Helston festival. *F'er*, a fair, W. *ffair*, B. *foar*.

FUSY, VUSY, VAZY. Good (Mousehole). *Más*, good. W. *mad*, B. *mád*, in its mutation to *vás*, *fás*.

GADGEVRAWS, GAJAVRAWS. An ox-eye daisy. [*Cajar vras*], *gajah brawz*, a great daisy. *Gajah*, a daisy (Borlase), is for [*cajar, casar*]. W. *cadar*, a shield, *cadar farth*, flat shield, whence *cadafarth*, a corn-marigold. *Caja*, as shown by the mutation of the adjective *brás*, great, to *vrás*, is feminine. "The great daisy" would therefore be *an gaja vrás*, whence "gadgevraws." Borlase writes, incorrectly, *gajah brawz*, ignoring the gender.

GARD, GEARD. Scouring sand. Cf. W. *carthu*, B. *karza*, to scour. In Cornish [*cartha, dho gartha*], to scour.

GAREY. To put anything into words, to wrangle. [*Geria*], W. *geirio*, to word, to phrase, from *gér*, W. *gair*, B. *ger*, a word.

GARM. To scold, to berate. *Garm*, a shout, W. & B. *garm*, whence *garma*, to shout.

GAVERHALE. A snipe. *Gaver hál*, "moor goat," W. *gafr y mynydd*, "mountain goat," and *myniar*, "kid-hen," Gaelic *gabhar athar*, "sky goat." French *chèvre volant*, "flying goat," etc., all allude to the sound made by this "heather-bleater," as it is also called.

GAVERICK. A red gurnard. GABERICK, a spider-crab (S. Cornwall). *Gaverik*, a diminutive of *gaver*, a goat, W. *gafr*, B. *gavr*; in each case with allusion to the long "horns."

GAYVER. A crayfish (Mullion). A spider-crab (Portloe). *Gaver môr*, "sea-goat," crayfish, B. *gavr-vôr*; see GAVERICK.

GEEK. To peep. Cf. W. *gygu*, to peep, *gwg*, a glance; suggesting an origin other than "keek," North Country dialect, Dutch *kijken*, to peep, for this word.

GEZZA CRAB. A spider-crab (St. Ives). "*Tragezawt*" (Ray), of which this may be a cut-down form, suggests *dròk sort*, "bad urchin," W. *drug sarth*. See ZART.

GLAND, GLAN. The bank of a river. *Glan*, W. *glan*, B. *glann*.

GLAWS. Dried cow-dung fuel. *Gloas*, W. *gleiad*, B. *glaeod*.

GLEET. Damp on the surface of a wall. *Glúth*, dew, W. *gwlieth*, B. *gliz*.

GLIZZON. A mud-bank, covered with "sea-grass" (Helford River, per Dr. W. Boxer Mayne). W. *glesin*, a greensward, from *glas*, green.

GLOOB, LOOB. Slime of the after-leavings of tin. *Gléb*, moist, also moisture, W. *gwlyb*, B. *gleb*.

GLUTHEN. To gather for rain. *Glúth*, dew. See GLEET.

GOLUZZOW. GUZALEZZA. An octopus (Mousehole). Perhaps *collel lesa*, "spreading cuttle-fish." *Collel*, see COLE, and *lesa*, to spread, W. *lledu*, B. *leda*; *an gollel lesa*, the octopus.

GOOG. A cave. See FOGO.

GOOK. 1. Granite silt (St. Just). *Cók*, empty, sterile, W. *coeg*.

GOOK. 2. A sun-bonnet, a bonnet-shade. *Penguch*, a bonnet, W. *penguwch*, is found in the oldest Cornish vocabulary. Literally *pen* head, + *cuch* = W. *cwch*, hat-crown. Cf. W. *cychu*, to cover.

GOOKY, GUCKY. A fool (St. Just). *Cók*, foolish, from *cók*, empty, W. *coeg*.

GOOSIGEN, GOOSEY-GEN. A blister, caused by a pinch or blow (St. Just). *Gúsigen*, a blister, W. *gwysigen*, *chwysigen*, B. *chouúzigen*.

GOOLANDIZE. A harvest supper. *Gól an deis*, "feast of the ricks." See GULDIZE.

GOSS. 1. Reeds. 2. a fuss, perplexity; literally a bog. *Cors*, a fen, W. *cors*, B. *korsek*, *corsen*, a reed, W. *corsen*, B. *kors* (the W. pl. of which is *cyrs*). *Cors* being fem. would by mutation become *an gors*, the fen; from which the *r* has been lost.

GOSSABEED. "Not for the world !," an exclamation. *Nag awos an bys*, found in *Resurrectio Domini* 938, 2471; and *Passio Christi* 2915: in later spelling *nag os a bėj*, from which the *na*, not, is lost, leaving *yos abėj*, whence "gossabeed."

GOUNCE. A place in which tin is washed. [*Cowans*], an excavation, W. *ceuo*, to excavate.

GOYLE. A cuttle-fish (East Cornwall). *An gollel*, the cuttle. See COLE.

GOZZAN, GOSSAN. Ferruginous earth. From *gós*, blood, W. *gwacd*, B. *goad*.

GREEK. A cray-fish (Coverack). Cf. W. *criciad*, a cricket. See GRIGGLE.

GRIGGLE. A spider-crab. [*Crigel*], an [*grigel*], a cricket, W. *cricell*; or *grill* (Lhuyd), a crab, B. *gril vôr*, a cray-fish, W. *grilliedydd*, a cricket. See CREAGLE, GREEK.

GRIGLAN. A stem of heath. GRIGLANS. Heath. *Grigloyn*, heath-bush, W. *grug, llwyn*, heath, bush, W. *grughwyn*, sweetgale, "heath-bush."

GROBMAN. A small species of bream (Cadgwith). *Crobmen*, a rounded thing, from *crom*, later *crobm*, rounded, W. *Crom*, B. *kroumm*; an *grobmen*, the bream.

GROCK. A tug or tweak, given to the hair. Cf. B. *krók*, a grip; but also *crok*, a hanging, a suspension, W. *crog*, B. *kroug*; an *grok*, the suspension. To "grock" a sheaf is to pull the loose straws from it (St. Just).

GROUGH, GRUFFLER, GRUFFLED UP, GRIFFEN UP. To flourish, one become fat, fattened, respectively. *Crefha*, *dho grefha*, to become strong, W. *cryfhau*, from *crêf*, strong, W. *cryf*, B. *kren*.

GROWAN. Decomposed granite, gravel. *Growan*, W. *graian*.

GROWDER. Decomposed granite, used for scouring. Probably *growdir*, "gravel-earth," *grow*, gravel, W. *gro*, + *tîr*, earth, W. *tîr*.

GRULIACK. Wretched, complaining (St. Just). Cf. W. *grillio*, to creak, and the dialect "craking," used similarly.

GRUTH, GROOTH. The crop of a bird (St. Just). [*Crûth*], W. *crwth*, belly, in its mutation to *grûth*; as *e grûth*, its crop.



GRUTHICK. Pot-bellied (St. Just). *Crothak*, W. *crothog*; or [*cruthak*], W. *crythog*, both with same meaning. The adjective, formed by adding *ak* to *Grúth*, see GRUTH.

GRY. A little vein in a lode (St. Just). *Gury*, a seam, B. *groui*, *gri*.

GRYDLANCE. The moving of a marble in play. *Gwruthylans*, a doing, a making.

GUJAWLTER, GIJOALTER. A rest or crutch for a lowered mast (Mousehole). *Kesolder*, [*Kejolter*], rest, *kesol*, quiet, + *der*, ness, W. *cysawl* + *der*. *Kesoleth*, quietness, is similar a word.

GULANEEG, GOOLNIGGAN. A cuttle-rod, made by lashing several hooks at the thicker end of a pliant rod, grapnelwise. *Gwelenig*, "hook-rod," *gwelen*, a rod, W. and B. *gwialen*, and *ig*, a hook, B. *igen*. "*Goolniggan*" (= *gwelen igen*) shows *igen* to have been a Cornish form also.

GULDIZE, GULTHIZE. A harvest supper. *Gól deis*, "feast of ricks," and the compound word *gôldheis* (in which the *d* becomes *dh* by mutation) "ricksfeast." See DICKLYDIZE. GOOLANDIZE.

GULIARK. A harbour-crab (Cadgwith). *Cularrak*, "lean-shanked." *Cul*, lean, W. *cul*, and Cor. W. and B. *gar*, shank, with the adjectival suffix *ak*, the *g* being lost by mutation.

GUNNIES, GUNNIS. A worked-out place in a mine. *Gunes*, *gones*, worked, past participle of *gunes*, *gonys*, to work, W. *gwneyd*.

GURGO, GURGEY. An old or broken hedge, especially a boundary hedge on uncultivated land. Cornish, *cur*, boundary, *kê*, a hedge, W. *Cur*, *cue*, B. *ker*, *ke*. *An gurgeow*, "the boundary hedges," gives the required mutation and termination for "gurgo," the usual form. *Curgê* would be the singular.

GURGY. "As mazed as a gurgy." (St. Ives, per Mr. W. Sandry). Cf. W. *gwrgi*, a cannibal, a "man-dog."

GUTHENS, GUTHERN. A sunken rock (Lands End Coves). *Cudhans*, a covering, a hiding, a noun formed from *cudha*, to cover, W. *cuddio*, B. *kuzu*.

GWAG. An empty or hollow place in a mine. *Gwag*, empty, W. *gwag*, B. *rag*.

GWAITH. A breast-hook in a boat. *Gweth*, a garment. See QUETH.

GWEEAN. A periwinkle. *Gwighan*, W. *gwichiedyn*.

GWENDERS. Frostbite, numbness of fingers. W. *gwynrew*, *gwyndraw*. See WONDERS, WINDRAW.

GWIBBER. A poor-cod, or power. Cf. W. *gwibwr*, a rover; also *ewybr*, quick.

GWIDGY-GWEE, GUDGY-GWEE, GWIDJAWEETH. A black spot caused by extravasated blood, the result of a pinch or blow. *Gós gwyth*, later *gŷj gwith* "blood of a vein," the *th* silent. "Gwidjaweeth" is *gŷj a with* (where *a*, "of," causes loss by mutation of the following *g*; the final *th* being sounded) W. *gwued o wyth*. B. *goud a wazen*.

HECCA, EKKA. A fool. Literally a "Dick." *Hecca*, Richard, Dick.

HEDOKHAGENAH! A call, encouraging yoke-oxen to greater effort (Mylor, per Dr. W. Boxer Mayne). *Hedheugh e genough*, "Fetch it with you!" a phrase still used in English, as in boat-launching.

HILLA. Nightmare. Borlase writes this *hillah*, *ella*; older Cornish would be [*hintef*], "sleep-ery." W. *hunllef*, nightmare, *hun*, W. and B. *hun*, sleep, and *lêf*, W. *llef*, B. *ter*, a ery.

HOGGAN. A dinner-cake. W. *chwiogen*, a cake. B. *c'hustoc'hen*. Pryce, with the mistaken idea that pork was a necessary part of a "hoggan," connected it with "hog." The names "fuggan" and "hoggan" are, however, used in different places of any sort of dinner-cake. See FUGGAN.

HOGGEN. A haw. W. *egfuen*, B. *hogan*.

HUGO. A cave. See ROGO.

IBBEL. A colt. *Ebol*, W. *ebol*, B. *ebent*. "Hibble," a small mow of corn in a field (St. Just), seems to be the same, the large mows being likened to horses.

ILES. The liver-fluke in sheep. Cf. W. *aelod*, ailment, in Cornish form [*eiles*].

ISHAN. Husks of corn. *Ision*, *usion*, W. *eisin*, *usion*, B. *usien*. See USHANS.

JALE. To walk quickly. Perhaps [*dyhela*], to chase, *dy*, intensitive prefix, and *hela*, to chase, W. *hela*.

JANK. To stride, to walk quickly. *Deank*, to run away, W. *dianc*.

JANNACK. A lout. Cf. W. *iang*, rude, boorish, in Cornish form [*ian*], with the adjectival suffix *ak*, [*ianak*], a boorish fellow.

JENNARD, JANNERD. A redwing. [*Jeniar*, *Yeniar*], "bird of the cold," *yén*, cold, W. *iain*, B. *ién*, and C. W. and B. *iur*, hen, bird.

JAN SHEWALL. A redwing. For "shewall," cf. W. *yswil*, shy, in Cornish form [*suel*]. See SWELLACK, which would be [*suelak*], "shy one."

JOWDS, JOWDER. Overboiled food. *Iot*, pap, W. *ued*, B. *ioul*. *Iot* is a very old form; the later pronunciation would be nearer to "yowd," probably. *Jowder* is apparently for *jowdow*, pl.

KAGER. Hemlock. [*Keger*], W. *cegyr*. See KEGGAS.

KANKAYERS. Confederates. W. *cynghreirio*, to confederate, in Cornish form [*kencreiria*], from *cyn*, together, and *creirhau*, to swear; literally by "relics," *crair*.

KEATHAN. A soft layer on the face of hard granite (St. Just). [*Kidhen*] from *cudha*, *kidha*, to conceal, to cover. W. B. *cuddio*, *kuza*. *Lêth kidhes*, scalded, literally "coated," milk, (*leath kithes*, Gwavas), gives the passive participle. *Kidhen* is probably formed like W. *cuddlyn*, a shelter. Cf. GUTHENS.

KEDDEN. To encrust with mud [*Kenna*], later [*kedna*], to encrust, W. *caenu*, from *kén*, skin, peel. W. *caen*, *cen*, B. *kenn*.

KEEP. Dear, expensive (St. Just, per Mr. R. Hall). *Cuf*, [*kif*], dear, beloved, W. *cu*, B. *kuff*.

**KEGGAS.** Hemlock, or allied plants. *Keges*, W. *cegid*, B. *kegit*.

**KEGYANS, KEGIONS.** Small refuse turnips, apples, potatoes, etc. *Kegion*, the regularly formed pl. of *côk*, worthless, a worthless thing, W. *coeg*, with a needlessly added *s*.

**KEKEZZA.** The Cornish heath. Cf. W. *cigaid*, flesh-like, perhaps alluding to its colour. "Kekezza" looks like a pl. form.

**KELIG, KALEGA, CLEG.** A razor-fish. *Keligen*, probably *kelilik*, "little knife," with the "individualizing suffix" *en*, of which these dialect forms give the collective pl., *kelig*.

**KELLY, KELLAS, KILLIMORE.** A pig-nut. *Keler*, W. *cylor*, B. *Keler*, to which in "killimore" is added English "more," a root. For "Kelly" from *Keler*, cf. "bully" in CASSABULLY, q.v., from *beler*.

**KENACK.** A worm; a weakly child. *Kinak*, a worm. "Poor worm," "tender worm," are endearments. "Kennack" a rush-light, seems to be so named from the worm-like appearance of the peeled rush.

**KENNIN, KENNEL.** A cataract on the eye. From *ken*, skin, W. *cen*, B. *kenn*.

**KENTEPATHENGY, KENTEPURTHURGY.** Pegs belonging to the frame of a stone-and-wood anchor, or "killick" (Mousehole). *Kentrow abarth ân gê*. "Pegs at the side of the frame," or *kentrow ow-perthen a gê*, "pegs belonging with the frame"; *kentrow* being the pl. of *kenter*, a peg, and *gê*, a mutation of *ké*, usually a fence, or enclosure. [*Perthen*] is W. *perthyn*. See CANTER, DURG.

**KEVERAN, KEVERN.** The joint of a flail or threshel. [*Kevren*], W. *cyfrae*, B. *kévré*, the Cornish form being a diminutive, with *en* added.

**KEWNY.** Moss, lichen, etc. Cf. B. *kirni*, Irish *cunach*.

**KIBBLE.** A well=or mine-bucket. *Kibel*, B. *kibel*, a tub.

**KIDGE.** To stick together, to agree. Cf. W. *cydio*, to join, in Cornish form [*Kysye*, later *kejia*].

KIGGAL. Bottrell understood this, as dialect, to mean "spindle." It is actually the word for "distaff," *kegel*, *kigel*, W. *cogail*, B. *kigel*. Lhuyd's "*gigel*, a spindle," is a similiar slip, corrected by him elsewhere.

KILLAS, KELLUS. Clay slate. Cf. W. *cyllu*, to separate, in Cornish form [*kella*]: past participle [*kelles*], separated.

KILLIARS, KILYUR BANKS. Rough, overgrown mounds. Perhaps *kiliow*, recesses, retreats, pl. of *kil*, W. *cil*.

KILLIN. Holly. *Kelin*, W. *celyn*, B. *kelen*.

KIVVY. A bream (Sennen). Cf. *cyp*, in W. *cippysg*, a carp.

LAGGEN EN DOUR. Splashing in the water, of fish, or of children (Newlyn). *En dour*, "in water," is Cornish, W. *yn*, *dufr*, B. *enn*, *dour*; "lagging," spattering, is English.

LAGYER. A moorhen (St. Just). [*Lag*], a pool, W. *llagad*, B. *lügen*, and *iär*, a hen, W. *iâr*, B. *iär*.

LAISTER. The yellow flag. *Elester*, W. and B. *elestr*.

LAST. Bait cut from a mackerel's tail. *Lost*, a tail, W. *llost*, B. *lôst*. "Lask," "lash," "lace," "lass" are variants.

LATCHET. A cake baked in a frying-pan. *Letshar*, a frying-pan, W. *lletwed*, a ladle. *Tesan letshar*, a frying-pan cake, would be the original.

LAWN, LAWEN. An open mine-working (Towednaek); an open space, as "Lawn Bennet" (Mousehole). *Lân*, apparently a mutation of *glân*, clear, W. *glân*, B. *glon*.

LEA, LAY. A slab of stone (St. Just). *Lêgh*, W. *llech*, B. *leac'h*.

LEGATTER. A bib or blind (St. Ives). [*Lagater*], "goggler," [*Lagata*], to goggle, to stare, from *lagas*, older *lagat*, an eye, W. *llygad*, B. *lagad*. See BOTHACK.

LEVEROCK, LAVAROCK. Terms applied to a slut and a drunkard, respectively. *Larrok* usually means "breeches": but this seems to be an opprobrious term like W. *llafren*, *llafrog*, from *llufr*, breech.

LIDDEN. A pool (Towednack, St. Just). [*Lidn*], a later form of *lin*, W. *llyn*, B. *lenn*.

LINUTH DUFF. Kidney pudding. *Lonath*, kidney, B. *lonez*.

LISTING. Throbbing with pain. Literally "burning." *Lesky*, to burn, to smart, W. *llosgi*, B. *leski*.

LIZAMOO. ♣ Cow-parship, hog-weed. *Lesow móg'h*, "pigs' plants," W. *llysau moch*, B. *louzon môc'h*.

LODDEN. A pool. E.D.D. suggests Gaelic and Irish *loda*n, a pool : but this seems more likely to be cut down from *pol lodn*, cattle-pool, see PLODDEN.

LOO. A bit of slate, or hoop-iron, fixed into the bottom of a COCK-AN-BAWEA, q.v. (St. Ives). *Lew*, a rudder, W. *llyw*. See TOL-A-MEAN.

LOOB. A mutation of GLOOB, q.v.

LUDRAS. The wooden frame of a killick (Mousehole). Perhaps the killick was nicknamed "breeched-stone," *mên lulres*, from *loder*, hose, W. *llawdr*, breeches, B. *loer*. *Clud dres*, "cross-hurdle," although apt, would not naturally lose its *c*.

MABYER. A pullet. *Mabiur*, "son of a hen," W. *mab iâr*, B. *mab iar*.

MALAGOWLA (St. Ives), MAGGIOWLER (Truro River), MACHIOWLER (Mevagissey). A jelly fish. *Mulgouly* (Ray), and *morgoulys* (Borlase), show the original to have been *morgowles*, "sea-congelation," W. *morgeulud*, B. *môrgaouled*. *Môr*, sea, is apt to become *mul* in composition. See MORGUL.

MEAN, MEEN. The face, nose or bill. MEEN. To rub noses (St. Just). *Mîn*, a tip, a month, W. *min*, B. *mîn*. See PEDNAMEEN.

MEANOLLAS. A boat-hearth (Mousehole). *mên olas*, hearth-stone, W. *maen aelwyd*, B. *men oaled*.

MELWIDGEON. A sort of slug (Redruth). [*Melwhijen*], a slug, W. *malwoden*, B. *melc'houden*. Lhuyd spells this *molhuidzhan* ; older would be [*melwhesen*].



METHAM. "Metham with all the world;" equal. *Ethom*, need, B. *ezom*, seems to be preserved here. *Mês a 'm ethom*, "out of my need," or *heb ethom*, "without need," may have formed part of the Cornish phrase.

MIDGE-GO-MORRAH. A muddle. [*Mijgemeras*], earlier *mis-kemeras*, to mistake. The word is a late one, imitating English "mistake"—"mis" and *kemeres*, to take, W. *cymmyryd*, B. *kemerout*.

MIDGETTY-MORROWS. A restless fit. [*Mijgemeras*], in its sense of "to wander." Cf. "padgetty-poo" from *pajer paw*.

MILPREVE, MILLPROO. An ancient bead, believed to be produced by snakes. *Mil prêr*, a thousand snakes, W. *mil pryfj*, B. *mîl, prêr*.

MILSY, MILZY, MILGY, MILCHY. Injured by damp, so that bread made from it is sweet and sticky, of corn and flour. W. *melus*, sweet, B. *meluz*, from *mêl*, honey. W. *melusu*, to sweeten, in Cornish form would be [*melesy, melejy*].

MINNIZ, MINNUS, MENNAZ. A strop-stone. Perhaps, like another of its names, "jawen-stone," this refers to the notches made for its rope. [*Minnes*.] "mouthed," "lipped," from *mîn*, a mouth, lip. *Minys*, "small," does not seem distinctive. *Mên minnes*, would be near "jawen-stone" in meaning.

MIT. The station from which a throw was made in playing at "bob-buttons" (Bottrell). Cf. W. *mid*, a list for combatants.

MOGGIATOR. The top stone of the pile in the ancient game of "kook"—quoits played with stone disks. Perhaps *an moghia tûr*, "the greatest tower," likening the pile to a castle, or "greatest of the pile." See TOR, 1.

MOLLA-HEAD, MOOLAN (Morvah). A shock-head of hair. Cf. W. *mucl*, chaff. [*Mûlen*] is perhaps a pile of broken straw.

MORGIL, MORGUL. A jelly fish (Mount's Bay). [*Morgowl*], "sea-curd." This is a variant of MALAGOWLA, q.v., where the second part of the word is *cowl*, curd, W. *caul*, B. *goel*, instead of *cowles*, W. *cenlad*, B. *kaouled*.

MORGY. A dogfish, the rough hound. *Morgi*, sea-dog, W. and B. *morgi*, compounded of *môr*, sea, and *ki*, dog.

MORRAB, MORRAP. Low-lying land on the shore. *Mor*, sea, + *reb*, beside. Pryce's *morep*, "above sea," seems to be this word.

MULGRONECK, MULGRANACK. A smooth blenny (Lizard Coves). *Morgronek*, "sea-toad," *môr*, sea, + *cronek*, a toad. In Ray's time this was already "mulgironock." Cf. MALAGOWLA, MULVAINAH. At St. Ives, Penzance, and Marazion, this is shortened to "mulley," for "mulligranock."

MULLA. A hard felt hat (Newlyn, per Mr. H. Jenner). Cf. *mul*, round-topped, bald, W. and B. *moel*.

MULVAINAH. A monk-fish (St. Ives, per Mr. W. Sandry). *Morranagh*, "sea-monk," *môr*, sea, + *managh*, a monk, W. *mynach*. B. *manac'h*.

MUN. Fish-offal, used as manure. Cf. B. *mon*, ordure.

MUNDIC. Pyrites, *Mundek*, "pretty-mineral." W. *myyn, teg*.

MUNGER, MUNGERN. A straw horse-collar. *Munger*, *mungaren*, W. *mygwair*, B. *morgô*. W. *mun*, neck, *gwair*, hay, seem to give the meaning, hay-bands having preceded straw-rope in its manufacture.

MURRICK. A sloven. [*Merek*], a sniveller, a driveller. W. *mer*, a drop, a drip. Pryce's *goverack*, a sniveller, is almost the same word, cf. W. *meru*, *goferu*, to drip, in Cornish form [*mera*, *govera*], *go* implying lessened action.

MURYANS. Ants. *Murion*, W. *myrion*, B. *merion*, already plural.

MUTTY, MOOTY. To sulk. Cf. W. *mud*, silent, B. *mud*, *mût*.

NARCHER. A shrewd, mischievous boy. Perhaps *najeth*, a needle, older *nasweth*, W. *nodwydd*, B. *nadoz*, the final *th* silent.

NEKEGGA. Heath, ling. Cf. W. *mynog*. This seems to be a pl. form, perhaps for [*menkeggow*], sing. [*mencak*].

OGO. A cave. See FOGO.

ORRAN. A bundle of thatch from a rick, kept to be used again (Morvah, per Mr. R. D. Daniel). [*Goren*], *an* [*oren*], a wisp, properly of hay, W. *gweiryn*, from Old Cornish *gnyraf*, later *gorra*, hay, W. *gwair*.

PADDICK, PATTICK, PARRICK. A small jug : a simpleton, "pot-head." Cf. B. *podik*, a little pot.

PADELENKAN, PADDYLINKUM, PODLINKER, etc. A great cuttle fish, or ink-fish. [*Padalenk*], "ink-pot," with the "individualizing suffix" *en* ; *padal*, pan, dish, W. *padell*, B. *pézel*, combined with "ink," referring to the sepia.

PADGERPAW, PADGYPAW, PADGETTY-POO, etc. A newt ; also a lizard ; also a water insect, *ramatra*. *Pajerpaw*, "four-feet," quadruped, *pajer*, older *peswar*, four, W. *pedwar*, B. *pavar*, and *paw*, a foot, W. *pawen*, B. *pao*. Cornish nouns remain singular after a numeral.

PARE. A gang : a drove. Cf. W. *pari*, a drove, *par o ychen*, a yoke of ozen. The Hobby-horse "pairs" at Padstow have the same name.

PAW. A claw, of a crab or of a grapnel. *Paw*, a foot, W. *pawen*, B. *pao*.

PEDNAMEEN. Head and point, head to tail, a game with pins (Mous-hole). *Pedn ha min*, "head and tip ;" *pedn*, older *pen*, head, W. *pen*, B. *penn* ; *ha*, and ; *min*, tip, W. *min*, B. *mîn*. Variants are "heads or means," "pinny ninny," and "piddlymean."

PEDN-A-YAR. The "neck" or "goose-neck," the last handful of corn, cut with ceremony at the end of harvest (Buryan, per Mr. H. Jenner). *Pedn yâr*, or *pedn a yâr*, hen's head. W. *pen iâr*, B. *penn iâr*.

PEDNANS. Small bits of turf, "ends." *Pedn*, head, with the "individualizing suffix," *en*.

PEDNBORBES, PEDN-A-BORBAS. A three-bearded rockling (Monsehole). *Pedn barves*, "bearded head," *pedn* + *barves*, bearded, from *barr*, a beard, W. *barf*, B. *barv*. This does not mean "cod's head" (Pryce's definition); although *barfus*, *barvas*, "bearded," is the name of the cod-fish.

PEDNCAIRN TIN. A bunch of ore at a distance from the lode. *Pedn carn*, "end of a rock." W. *pen*, *carn*, B. *penn karn*.

PEDN PALY, PEDN-A-PALY, PEN PALY, PRIDEN-PRALL, PRID-PRAD. A blue-tit. *Pedn paly*, older *pen paly*, "satin-head," W. *pen*, *pali*. "Priden-prall" imitates *pedn pral*, a skull.

PEDRACK-MOW. An arish-mow of conical shape. [*Pedrak*], square, and here "angular," W. *pedrog*, from *pedar*, W. *pedair*, four.

PEETH. A draw-well. [*Pyth*], a well, a pit. W. *pyd*, a pit, *pydew*, a well, B. *puñs*.

PELLAR. A white witch, one who removes spells. *Pellar*, a remover, from *pelly*, to remove, to drive out, W. *pelläu*, B. *pellaat*, the root of which is *pell*, far.

PEMPES. A fifth. Survives in the "mackerel chant," see BREAL.

PENGLAZE. A hobby-horse character in a Christmas game. *Pen gläs*, "grey-head," W. and B. *pen glas*.

PEPERAN. A harbour-crab (Coverack). *Peberen*, "little baker," a diminutive of *peber*, W. *pobwr*, B. *pober*. "Baker-crab" is a name given elsewhere to similar crabs, from the "kneading" motion of their claws.

PESWARA, PESWARTHA. A fourth. In various forms of the "mackerel chant." See BREAL.

PETHICK. A smart blow (St. Just). Cf. W. *peyth*, a point, a putting in, a stitch, of which this would be a diminutive, with *ik* added.

PEZZACK. A rotten pilchard; a broken fish that will not "take salt," and make a "fermade." *Pesak*, rotten, [*Pos*], rot, with

the adjectival suffix *ak*. Cf. W. *ped*, sheep-rot, which in Cornish should be [*pos*]. *Podar*, corrupt, and *pedry*, to rot, are allied words. The latter shows a similar vowel change of *o* to *e*.

**PIGGAL.** A long-handled pick, or peat-axe. *Pigol*, Cf. W. *picell*, a javelin, B. *pigel*, a javelin ; a small hoe.

**PIGGY-WIDDEN.** The smallest pig of a litter. *Widn*, a mutation of *gwidn*, white, older *gwin*, W. *gwyn*, B. *gwenn*. Borlase writes *Pig bihan*, "little" pig ; but the idea of whiteness is present in the W. equivalent, *cardydwyn*.

**PIL.** A heap, a throng (Mount's Bay). *Pîl*, a heap, W. *pîl*, B. *pill*.

**PILIACK.** A pitiful creature. [*Piliak*], one stripped, or perhaps=Eng. "scurvy fellow." [*Pela*, *pilia*], *pylé*, to strip, to peel, W. *pelio*, B. *pelia*. *Pedn-pilles*, bare or "peeled," head, was a term of reproach.

**PILIERS, PILYERS.** Small heathy knolls or hummocks (Lizard District). This seems to be formed from *pîl*, a heap ; (but resembles **KILLIERS**, q.v., in both sound and meaning).

**PILLAS.** The naked oat. *Piles*, bare, stripped. See **PILIACK**.

**PILLION.** Tin left in the slag after the first smelting. Cf. W. *pilion*, strippings, pl. of *pîl*, peel, etc.

**PISKY POW.** A knobbed ridge-tile, called also in the pl. "piskies feet." *Paw*, a foot. "Pisky," (= "pixy," "Puck," etc.) is English.

**PIZZIL.** A water conduit (St. Mabe, per Mr. Jenner). Cf. W. *pistyll*, with same meaning.

**PLAITH.** The ridge of a long corn-mow (St. Just). *Plêth*, a plait or wreath. W. *pleth*.

**PLETHAN.** A plait ; also to plait, to wattle. *Plethen*, a single plait ; formed from *plêth*, a plait, W. *pleth*, by the suffix *en*, W. *gn*. The Cornish verb, = "to plait, to wreathe," would be [*pletha*], W. *plethu*.

PLEVEN. Undeveloped feathers in poultry (St. Just). *Pluren*, a feather. W. *plufyn*, B. *pluen*.

PLODDEN. A pool. *Pol lodn*, *pludn* (Borlase), a cattle-pond; compounded of *pol*, a pool, W. *pull*, B. *poull*, and *lodn*, *lon*, a bullock. W. *lludn*, a young animal, B. *loen*.

PLOUGHYA. A great splash. Cf. W. *gwlych*, wetness, with its verbal forms *gwlychu*, *arwlychu*, *gorwlychu*, to wet, splash, drench, to which may be prefixed *pot*, a pool, unless the *p* has replaced *g*.

PLUMAN. A plum. "Plum," adopted into Cornish and given the "individualizing suffix," *en*. *Plumbren*, "plum-tree," is in the oldest Cornish; *plumyn* is used similarly in South Wales dialect.

PLUMZUGEN. A three-bearded rockling (St. Ives). *Plum-sugen*, "plumjuice," from its colour, or "suck-a-plum," alluding to the shape of the fish's mouth. *Sygan* = *sugen*, juice (Lhuyd), W. *sugn*, B. *chugon*; or the verb corresponding to W. *sugno*, to suck, B. *chugein*, *suna*, in Cornish perhaps [*sugena*].

POCK. To push; a push. *Pok*, a push, *pokkia*, to push (Pryce). Perhaps Williams is right in connecting this with Welsh *pwg*, a thing that pushes, rather than with "poke."

PODGER. A platter. Perhaps = *potdir*, "earthen-pot," a compound of *pot*, a pot, W. *pot*, B. *pod*, and *tir*, earth, W. *tir*, B. *tîr*, which might become [*pojer*].

PODN. Mine dust (St. Ives). *Podn*, older [*pon*], fine light dust, W. *pan*.

POLLECK. POLLET. A knobbed walking-stick (Newlyn). [*Polik*], a diminutive of [*pól*], a stake, W. *pawl*, B. *peúl*, made by adding the suffix *ik*, B. *ik*.

POLYN. A walking-stick (Mousehole). [*Polen*], W. *polyn*, a diminutive of [*pól*], a stake, made by adding the suffix *en*. W. *yn*.

POOL. To cut holes in stone for wedges. [*Pulla*], to make a pit, W. *pyllu*, a verb from *pol*, in its sense of pit.



POOT. To kick backwards; a kick so given. [*Poutia*], *pottgé*, to kick, W. *putio*, to push, B. *pouta*, to kick. The past participle occurs in *Origo Mundi* 2807.—*yn dan dryys may fo pottyys*—"underfeet that it may be kicked," mistranslated by Norris, "that it may be put across it."

PORBEAGLE. A bottle-nosed shark. Possibly *porghbîgel*, "swineherd," "pig-driver," with allusion to "sea-swine"—porpoises, *porgh*, swine, W. *porch*, B. *porc'h*, and *bîgel*, a herd, W. *bugail*, B. *bugel*, now "a child."

PORF. See PORVAN.

PORL. A young pig (Buryan, per Mr. H. Jenner). *Porghel*, a little pig, W. *porchell*, B. *porc'hel*.

PORTH, POR'. A cove, a harbour, as, "in the por'" (Mouse-hole). *Porth*, the *th* silent, W. *porth*, B. *porz*.

PORVAN, PURVAN. The rush wick of a train-oil lamp. Cf. B. *pourc'hen*, a wick, W. *pabwyr*. Borlase gives *purran*, a rush, W. *pabwyren*, and "porf," a stagnant pool, may well mean "rushy pool," *pol porf*, giving the collective noun *porf*, the rush, from which *porren* is formed by adding the suffix *en*.

POSH. A chest cold (Polwhele). *Pâs*, W. & B. *pâs*.

POSTER. A thunder cloud (Sennen). *Poster*, *poesder* (Pryce), heaviness, W. *pwysder*. "Thunder-post," and "posty" weather, are also used.

POTHERICK. A spider-crab (St Just). *Podrak*, or *podrethek*, rotten, worthless, formed from *poder*, rotten, W. *pwdr*, or *podreth*, rottenness, W. *pyldredd*, by the adjectival suffix, *ek*, as W. *pyldredig*.

PRAAV. A sea-worm, nereid. *Prêr*, a worm, W. *pryff*, B. *prêv*.

PRALL. To pester, to tie a can to a dog's tail. Cf. B. *sparl*, a clog, *sparla*, to impede. See SPRALL.

PREEDY. Forward, pert, apt, *Prês*, older *prit*, time, W. *pryd*, B. *pred*, seems to be preserved in this. Cf. W. *prydus*, comely, seasonable.

PRILL. A solid piece of ore. Cf. W. *priddel*, a clod. "Prillian tin" seems to give the pl. *prillion*. "Prills," sheep-droppings (St. Just) is probably the same word.

PRYAN. A vein of clay in a lode. *Prian*, clay-ground, W. *priddin*, earthen, B. *prien*, clay-batter for building, from *prÿ*, clay, W. *pridd*, B. *prî*.

PULLAN. A rock-pool. *Pullen*, *polan*, a diminutive of *pol*, a pool.

PULROSE. The pit of a mill-wheel. *Pul rôs*, "wheel-pit," W. *pull*, *rhod*, B. *poull*, *rôd*.

QUARE, QUEER, QUER, QUERE, COOYER. A cross-wall or joint in a lode. Cf. W. *cywair*, connection.

QUETH. A breast-hook in a boat. *Queth*, a garment: another form is GWAITH, q.v.

QUILKIN. A frog. *Quilkin*, *Kwilken* (Lhuyd), in oldest Cornish *guilschin*, = *gwilskin*, *gwelsken*, B. *gwelskler*, *gwesklen*; apparently meaning "grass-skin," from its bright green colour, *gwels*, grass, W. *gwellt*, and *ken*, skin, W. *cen*.

RADGEL. A mass of loose rock or "scree" (Zennor, Morvah). Cf. W. *rhad*, free, loose: *rkedol*, running.

RAGLEN. A fisherman's petticoat-trousers (Newlyn). *Raglen*, literally "fore-cloth," W. *rhag*, fore, B. *rak*, and *llen*, cloth, B. *lenn*.

REEN. A hillside, a promontory. *Rin*, W. *rhÿn*, B. *rîn*.

RISK, RUSK. Rind or bark. *Risk*, W. *rhÿsg*, B. *rusk*.

ROADLING, ROODLING. Delirious, maundering. Cf. W. *rhodellu*, to whirl, B. *rodella*, W. *rhodol*, wandering, from *rhod*, *rôd*, a wheel, an orb. In Cornish, however, one expects the *d* to become *s*, as in *rôs*, *rosellen*; perhaps the *d* represents the *j*, the later sound of *s*. Cf. GOSSABEED.

ROUSY-VOUNDER. A scoundrel, literally, "lane-stroller." [*Rosia*], W. *rhodio*, *rhodian*, to stroll, to gad, and *vounder*, a lane.

RUDELICK. See ELLICK

**RUDGE.** A partridge. *Grugiar*, a partridge, W. *grugiar*, a grouse, literally "heath-hen," *grug*, heath, and *iar*, hen. Being feminine, this when following *an*, the, would be *an rugiar*; this in dialect becoming "rugjar," "rudger," and finally "rudge."

**RULL.** To wheel in a barrow. Cf. W. *rholio*, to roll, B. *rula*.

**RUNKY.** Hoarse. *Renkia*, to snort, W. *rhyncian*, to gurgle, from *rhonc*, hollow-sounding, in Cornish form [*ronk*], W. *rhwnc*, a snort, a rattle in the throat, B. *ronkel*, is of the same origin.

**RÛs.** A net. See COWL ROOZ, TOLA ROOZ.

**RUSTRING-COMB.** A dressing-comb. **RUSTER,** to comb the hair. Cf. W. *rhestru*, to arrange, *rhestr*, array, order, in Cornish form [*restra*, *rester*].

**RUT.** To rub; friction. *Ruttia* (in Lhuyd's spelling *rhittia*, *rhyttia*), to rub, W. *rhutia*, B. *ruza*. *Rût*, friction, is represented in W. by *rhution*, pl., dregs.

**SA ! SA !** Stop ! Let be ! *Sâj*, *sáv*, *sâ*, Stand ! 2nd pers. sing. imperative of *sevel*, to stand, W. *sejyll*, B. *sevel*.

**SCABELOGUS.** Shabby, contemptible. Cf. *cably*, to disparage, W. *cablu*, B. *kabla*. See SCAVELIGVON, a pl. form.

**SCAD.** A horse-mackerel. Cf. W. *ysgadan*, a herring, Irish *sgadan*, Manx *skaddan*.

**SCADGAN.** A detestable fellow. From *casa*, *caja*, to hate, W. *casan*, B. *kasaat*.

**SCALL.** A fall of ground in a mine. *Scol*, *skul*, waste, spilt stuff, *scollygé*, *scollia*, *scullia*, to shed, to spill, B. *skuilla*, *skula*. "seall," a quantity (Redruth), "seall," a rogne, and "sealliack," a worthless person (St. Just), seem to be allied words.

**SCAM.** To put out of shape. *Camma*, to bend, W. *camu*, B. *kamma*, from *cam*, crooked, B. *hamm*.

**SCAT.** To break, broken, a blow, etc. *Scat* (*Skat*, *skuat*, Lhuyd), a blow. *Skwattia*, *squattia*, *squatcha* (Boson), to break, tear, etc. *Dho godha scat*, to fall "bang !" Cf. *Passio Christi* 2816.

SCAVEL AN GOW. Noisy talk, wrangling, a rabble. As spelt, this means "bench of the falsehood"; *scavel*, a bench, W. *ysgafell*, B. *skabel*, *an*, of the, and *gow*, falsehood, W. *gau*, B. *gao*. *Cably en gow*, would mean "to disparage falsely." Variants are "skavelling-gow," "scabble and gow." See SCABELOGUS, SCAVELIGYON, where an *s*, = W. *ys*, is prefixed to *cabel*.

SCAVELIGYON. An indiscreet person; also the wild arum (St. Just). [*Scaveligion*], pl. of [*scavelek*] or [*scablek*], a shameful thing or person, from *Cabel*, detraction, W. *cabl*. Cf. SCABELOGUS, SCAVEL-AN-GOW.

SCAVERNICK. A hare (Polwhele), *Scorarnak*, in oldest Cornish *scorarnoc*, W. *ysgyfurnog*, B. *skouarnek*, from *scovarn*, *skerarn*, an ear, W. *ysgyfurn*, B. *skouarn*.

SCAW, SCOW. Elder. SCAW-TREE. An elder bush. SCAWSY-BUDS. Budding elder blossom. *Scaw*, W. *ysgaw*, B. *skao*. SCAW-COO, woody nightshade, = *scaw-cûs*, "wood-elder," W. *coed*, B. *koat*. SCAW-DOUR, figwort, "water-elder," W. *dwfr*, B. *dour*; unless this is for *scaw-dôr*, "ground-elder," W. *ysgaw-y-ddaiar*, dwarf elder.

SCOGGAN. A mackerel's head, boiled (Mousehole). Cf. *scogan*, a fool (Borlase), W. *ysgogyn*, *coegyn*, an empty-pate, from *côg*, W. *coeg*, empty.

SCRINK. To grimace, *Scrynkyé* (*Origo Mundi* 570) = *scrinkia*, W. *ysgyrnygu*, to snarl, grin, or show the teeth, B. *skriña*.

SCROGGAN. A worthless person, a gallows-bird, from [*Crogen*, *scrogen*], a gallows-bird, W. *crogyn*, *ysgrogyn*. *Crogy*, *cregy*, to hang, W. *ysgrogî*, *crogî*, B. *kregi*.

SCUBMAW. Splinters, chips, fragments (Mount's Bay). *Scubmow*, pl. of *scobman* (Borlase), older [*scommen*], a chip. W. *cymnyn*, a cut, *ysgymnyn*, hewing, *gosgymmon*, match-wood, tinder. Another form (of these there are many) is SCOBMANS, the sing. with *s* added. B. has *eskammed*, a billet; *kemener*, a tailor, as allied words.

SCULVER. Waste (St. Just). [*Scullva*], a noun from *scullia*, to waste, with *ma*, a condition, added, as in *ladhva*, slaughter, from *ladha*, to kill.

SEIL. The foundation of a rick. [*Seyl*], older *sél*, a foundation, W. *sail*, B. *sól*.

SENSE! Stop! Hold! used in playing marbles (Polperro). *Sens*, 2nd pers. sing. imperative of *Sensy*, to hold, W. *synnio*.

SHAMMEL. A stope, originally a stage of boards in an open mine, upon which ore or deads were shovelled from below. Perhaps [*chemel*], a late form of [*temel*], a seat, W. *templ*. Such "shammels" would resemble the excavated seating of, e.g., Gwennap Pit, or a *plên-an-gwary*.

SIEDRICK. A broken gate. Cf. W. *asgethrog*, splintered, in Cornish form [*skethrak*].

SIGGER. To ooze, to leak out. [*Sigera*], to run out slowly, W. *segura*, to loiter, from *Zigyr*, sluggish (Lhnyd), dripping (Pryce), *síger*, hollow, full of holes (Lhuyd), W. *segur*, idle, B. *chuchuer*, a sluggard.

SIGGIN, SIGEN. A loop on a lead sinker (Mousehole, Newlyn). Cf. W. *syg*, a cart-trace, B. *sûg*, and Irish *sugan*, a hay-band, a straw-rope.

SILLYWIG. A young conger (St. Ives). *Silli whêg*, sweet conger; *Silli*, conger, B. *sili*, and *whêg*, sweet, W. *chweg*, B. *c'honck*. Congers were dried whole without salt, hence "sweet," and elsewhere in Cornwall were called "conger dowst," French *congre douce*, with the same meaning.

SKAL. A villain. *Gál*, a rascal, W. *gal*, a foe; *gwas gal*, a rascal fellow, would account for the *s*, although this is often added before *c*. Cf. also Irish *scalog*, a despicable old fellow, and SCALL, q.v.

SKARRAWEET. A black-headed gull (St. Ives). Cf. W. *ysgara*, terns, B. *skrar*, a tern, pl. *skrared*. "Skarraweet" may be a diminutive, [*skraik*], or [*scarawik*].

SKATE, SKEAT. A rent, a tear; to tear. Cf. SKLTHAN, which seems to be a diminutive of this.

SKEDGWITH, SKEDGE. Privet. [*Skejwith*], older [*skes wyth*], "shade-trees." *Skés*, shade, W. *ysgawd*, B. *skeud*, and *gwith*, trees. Cf. W. *yswydden*, a privet-bush.

SKETHAN. A tatter; a strip of bait (Buryan, Newlyn, Mouse-hole). Cf. W. *ysgi*, a cutting off. B. *skejen*, a slice, Irish, *sgathádh*, a shred.

SKIDDEN. The Manx shearwater. *Skithen* (Borlase). Cf. W. *ysguthan*, a stock-dove, in Cornish form [*skithan*].

SLINTRIM. An incline. Cf. *Slyntya*, to slide, W. *ysglentio*, from [*slint*], W. *ysglent*, a slide: "rim" may be compared with W. *rhem*, that which runs out.

SOGGAN. A cold dreary place; of a room. Properly a damp place, *sugan*, moist (Pryce), W. *swga*, soaked.

SOLLAR. A wooden platform, covering a shaft. *Soler*, a platform, B. *sólier*.

SOON. A charm. [*Són*]. W. *swyn*, from whence the verb *sona*, to bless, to charm, W. *swyno*.

SPALE. To mulct of wages. *Spál* (Borlase). Cf. W. *ysbeilio*, to despoil.

SPRALL. To fetter. See PRALL.

SPRIGGAN. A hill-gnome. *Spriggian* (Borlase), spirits, fairies. As pl. of *speris*, a spirit, W. *ysbrid*, B. *speret*, this should be [*sperijion*]: "spriggan," may however be *speris* with a diminutive, *igen*, like B. *gwasigen*, *korrigan*, from *gwas*, servant, *kor*, dwarf.

SPUR. A space of time. Cf. W. *ysbarth*, division, B. *speur*.

SQUARD, SKWORE. A break; to break, to rend. *Squardia*, W. *esgardio*, B. *skarza*, from *squard*, a cleft, W. *esgard*, B. *skarz*.

STAG. Nightmare. *Stak*, a bond, a tether, B. *stag*; from a common symptom.

STANK. To tread heavily, to trample. Cf. W. *sangu*, to trample, B. *sañka*.

STEWAN, STUAN. A slap, a blow. [*Stewan*], *Stiuan* (Lhuyd, misprinted *stiran*), W. *ystywan*.



**STILLEN, STILLING.** A small piece of wall in a mine, built to keep back ground. *Astyllen*, a board (Pryce). W. *astyllen*, B. *estellen*. [*Stillen*] is probably the Cornish form, and *astyllen* W. only.

**STRAWL, STROLL.** A litter, a mess. Cf. B. *stroul*, filth.

**STULL.** A stage of boards in a mine. [*Stull*], planks. W. *estyll*, pl. of *astell*, a plank. See **STILLEN**.

**SUBBAN.** A sop ; to crumble bread-crumbs into a broth-basin. *Suben*, a morsel, B. *souben*, sop, *souba*, to soak.

**SWELLACK.** A redwing. See **JAN SHEWALL**.

**TABBAN, TAB, TOB, TUBBAN.** A "morsel" of bread and butter ; a piece of turf. *Tam*, later *Tabm*, a morsel, W. *tam*, B. *tamm*: perhaps in a diminutive form as *tubben*, older *tabmen*, oldest *tammen*.

**TAIL-DOOEY.** A spotted ray (St. Ives). *Tâl dewes* "burnt-brow," or *tâl tew*, "thick-brow, are suggestions. Cf. **TALVER**.

**TALFAT, TALVAT.** A raised floor, a raised bed-place. Cf. W. *taflawd*.

**TALVER, THREE-TAIL TALVER.** A skate (St. Ives). [*Talver*], "low-browed," W. *talfyr*, or if *tâl* is used in the sense of "upper surface," "short-topped," *ber* short, low.

**TARMENACK.** A dawdler, a sloven. [*Termenak*], one who takes much time, from *termen*, time. Cf. B. *termen*, a dawdler, *termel*, to idle.

**TASH.** The quantity of furze, briars, etc., removed at one cutting (St. Just). [*Tas*], a stack or pile, W. *tas*, B. *tes*. W. *tasio*, to bundle. See **DASH, TOSH**.

**TEAT.** A draught of wind. Cf. W. *tîtr*, a whirl.

**TICKAREE, TIGRY, TIGGERY.** The kestrel or windhover. Cf. W. *taw*, quiet, motionless, and *curyll*, a hawk, *taw guryll*. "still hawk," with reference to its hovering.

**TIDDEN.** Painful, or tender, usually mentally (Gulval, St. Just). *Tyn*, later *tidn*, painful, W. *tyn*, B. *ten*.

**TILLIER, TELYAR.** A space between two ribs inside a boat (Newlyn, per Mr. J. B. Cornish). *Teller, tiller*, a place; found only in Cornish. Williams derives this from Latin *tellus*, the earth, genitive *talluris*, in Irish *tellur*, but the connection is not very evident.

**TISKAN.** A gleaner's sheaf. [*Tisken*], B. *teskuouen*, W. *twysen*. W. *twysgen*, closer in form, is used of a small parcel.

**TOL-A-MEEN.** A piece of slate fixed into the bottom of a cork boat (Mousehole). *Tol mén*, "hole stone," W. *twell, maen*, B. *toull, mean*.

**TOLLA ROOZ.** "Cast net!," a call of mackerel-seiners (Newlyn and Mousehole). *Toleugh rûs*, "cast ye net!," 2nd. pl. imperative of *tola, towla*, to cast, W. *tawlu*, B. *taoli*, and *rûs*, a net. W. *rhwyd*, B. *roued*; or if *tol a rûz*, "cast thou the net!," 2nd. sing. imperative, as in COWL ROOZ, q.v. Cf. "*A towlah rooz en môr*," = *ow-towla rûs en môr*, casting a net into the sea, Kerew. Matt. IV, 18, Gwavas MSS. f. 103.

**TOLYER PREDN.** A baking-dish. *Tolyer predn*, older *tallyour pren*, a wooden serving dish. *Tolyer*, French *tailloir*, a carving dish, a trencher, and *predn*, older *pren*, a tree. timber, wood, W. *pren*, B. *prenn*.

**TOM HORRY, TOM HURRY, TOM HARRY.** A skua. [*Tom hurer*], "dung-taker," W. *tom*, ordure, and the imperfect verb W. *hwre, hwriwch*, take thou!, take ye! from *hwr*, a taking, with allusion to the bird's well known habit, whence its Latin name *stercorarius*.

**TOOR.** Bog-peat for burning (St. Just). [*Towargh*], W. *twyarch*, B. *taarc'h*. See TOR. 2.

**TOR. 1.** A pile of rocks [*Tôr*], a pile, W. *twr*.

**TOR. 2.** Light turfy soil. [*Towargh*], turf, peat, W. *twyarch*, B. *taarc'h*. See TOOR.

**TOR. 3.** A distended stomach, of a child—"What a great tor!" (per Mr. H. Jenner). *Tôr*, a stomach, W. *tor*, B. *tôr*.

**TOSH.** A bunch of flowers. Cf. W. *twys*, a tuft. See also **TASH**, suggestive of another derivation.

**TOST.** A boulder-stick, on which the hooks are arranged (Mount's Bay, Sennen). Cf. B. *tos*, a stump.

**TOWAN.** A sand-dune [*Towen*], W. *twyn*, B. *tún*, *terenn*.

**TRANYACK.** A state of confusion or trouble caused in a house by illness (Ruan Vean, per Mr. S. Pascoe). *Trangiak*, = *tranjiak* (Borlase), a dream, an ecstasy, a difficulty. Literally a state of being beyond roads, or "overways-ish." In Cornish *tra-henji-ak*, and so one of being extravagant in fancy, or of not knowing which way to turn. *Tra*, over, W. *tra*, B. *tre*, and *hens*, a road, pl. *henji*, W. *hynt*, pl. *hyntiau*, B. *hent*, pl. *hinchou*, with the adjectival suffix *ak*.

**TRAWN.** A slanting or "canter" lode (St. Ives, Lelant). [*Troen*], a turn. W. *trôen*, B. *troén*.

**TREATH.** The shore-warp of a seine (Cadgwith). *Treath*, a beach, W. *traeth*, B. *tréaz*.

**TRELOOB.** To wash the "leobs." See **GLOOB**. For *tra*, cf. W. *trafu*, to stir, to scour, in Cornish form [*trava*] or [*trawa*].

**TRESTER.** A beam. *Troster*, pl. *tresters*, W. *trawst*, B. *treúst*.

**TRESTRAM, TRUSTRAM.** Bait cut up small. *Trús*, *tres*, across, W. *traws*, B. *treuz*, and [*toren*], a cut, W. *tòryn*, or [*trem*], a back, W. *trum*.

**TRIG.** A stance, a standing-place. *Trig*, W. *trig*.

**TRIG, TREAG.** Shell-fish, found at low tide; to gather such molluscs. *Trig*, ebb, W. *trai*, B. *treac'h*. *Môs dho drig*, "to go to ebb," was the Cornish phrase for such "fishing."

**TRISTRELL.** A butcher's chopping-block. [*Trestrellia*], to chop across. W. *traws*, *dryllio*, across, to chop.

**TROACH.** To walk slowly, to hawk or peddle. [*Trosia*, *trojia*], to walk slowly, W. *troedio*.

TROIL. 1. A little boat-trip (Penzance). *Troilla*, to turn about, W. *troelli*, B. *trodella*.

TROIL. 2. A miners' feast. [*Traoil*], a feast, W. *trawyl*; *tra*, extreme + *goil*, a feast, W. *gwyl*. See GULDIZE.

TROWL, TROLL. To turn over, of a foot or a shoe. [*Trowla*], to turn over, W. *trolio*, B. *trula*.

TROZE. A sound made by a boat, or by fish, in water (Monse-hole). *Trôs*, a sound, W. *tryst*, B. *trouz*. See DROZE.

TRUJA. A third. Survives in the "mackerel chant." See BREAL.

TUBBAN. A clod of turf. See TABBAN.

TULGY, TULKY. A dirty-faced person, one "as black as tulgy." *Tulgu*, *lewalgow*, darkness, W. *tywyllwch*, *tywyllwg*.

TULL. A miner's hard hat (St. Just, per Mr. R. Hall). Cf. W. *twl*, a rounded thing.

TUMMALS. Heaps, quantities. *Tomals* (Lhuyd), W. *talm*, a space, Irish *tamal*, or connected with W. *tom*, a heap,

TUNG-TAVAS, TONGUE-TABBAS, TONGUE TAB. A chatter-box, a tatler. *Tavas*, a tongue, W. *tafod*, B. *teod*. Probably from the terms of reproach, "*taw tavas!*" "*Tavas, tavas!*" applied to praters, meaning "silence (thy) tongue!", "Tongue, tongue!"

TYBAREESHAWINNET, TEI-BAREE-SHA-WINNET. A comforting phrase, used to children (Gwinear, per Miss M. Vivian). *Taw warré!* *Segh enap!* "Hush at once! Dry (thy) face!" *Warré wharé*, literally *war ré*, "at a run," is Cornish only, the other words are W. *taw*, B. *tao*; W. *sych*, B. *sec'h*, and W. *wyneb*, B. *enep*.

UCK-SHE-BAH. Filth. This seems to be an expression of disgust, possibly *Ogh, chî baw!* Ah, thou filth!

USHANS. Husks of corn. See ISHAN.

VALLEN, VOILLAN. In phrase, "as weak, or frail, as a vallen" (St. Ives). Cf. W. *molwyn*, a foam flake, in Cornish form [*molen*]; *an* [*rolen*], the foam-flake.

VEAN. Little. In CHEEL VEAN, q.v. In place-names this a familiar and well-understood word.

VESCAN. A finger-stall worn by harvesters (St. Just). A mutation of BESCAN, q.v.

VIDNEY VEOR. A coarse grass, bent, or sedge, growing in waste land (St. Just). Cf. W. *gŵyn*, hay, Latin *foenum*; also FUN, q.v. The place-name Rosevidny, "sedgemoor," preserves this word, to which, here, *reor*, a mutation of *meor*, *mêr*, great, W. *mawr*, B. *meur*, is added.

VOW, VUGH. A cave. *Fow*, a cave, W. *gŵau*.

VUG. A cavity in a mine. See FOGO.

WACCA. In expression, "sweet as wacca." *An whecca*, "the sweetest," superlative of *whêg*, *whêk*, sweet, W. *chweg*, B. *c'houek*; unless possibly for *whekter*, sweetness, B. *c'houekder*. Cf. TULGY.

WEGGAS. Bindweed. Cf. W. *gwäegu*, to clasp, the *g* lost by mutation. The ending may be, *ias*, *yas*, denoting a doer—*an* [*weggias*], "the clasper."

WETHES. A sixth. Survives in the "mackerel chant." See BREAL.

WHIDDLE. A tale, a whim. *Whethel*, a tale, W. *chwedl*, B. *kehezl*.

WHIPSIDERRY. A machine for raising ore, Cf. W. *chwiŵ*, quick, *sideru*, to twirl.

WIDN. See PIGGY-WIDDEN.

WILLEN. A beetle. *Whilen*, W. *chwilên*, B. *c'houil*.

WINNARD. A redwing. Perhaps a variant of *jennard*, q.v.

WINNICK. An overreacher, a cheat. Cf. W. *chwannog*, covetous, in Cornish form [*whannak*]. Also W. *chwennychu*, in

Cornish form [*whennegha*], to covet, from *whans*, desire. W. *chwant*, B. *c'hoant*.

WOD. A blow. *What*, W. *glat*, *chwald*.

WONDERS, WINDRAW. Frostbite, numbness in the fingers. *Ewinrew*, W. *ewinrew*, B. *irinreo*, from *ewin*, a nail, a claw, W. *ewin*, B. *irin*, and *rew*, frost, W. *rhew*, B. *reô*. See GWENDERS.

WRAH. A wrasse. *Wragh*, an old woman, a hag, a wrasse, W. *gwrach*, B. *grac'h*.

ZART. A sea urchin (Mousehole). *Sart*, *Sort*, an urchin or hedgehog, W. *sarth*, reptile, scorpion, hedgehog, B. *sort*, a salamander.

ZAWN. A fissure in a cliff. *Sawan*, Cf. W. *safn*, a jaw, a mouth, B. *saôuen*, a valley.

ZEW. "To work alongside a lode, before breaking it down." This seems to be the same as *dyzhue*, "to take away the DIZZUE, q.v., from a lode." This removal would "lay bare" or "disclose" the lode, in Cornish *discudha*, *diswedha*, [*diswa*]. 2nd sing. imperative, *diswé*. "lay thou bare."

ZUGGANS. The essence of anything. *Sygan*, [*Sugen*], sap, juice. W. *sugn*, B. *chugon*, See PLUMZUGEN.

# CORRIGENDA.

p. 1, last line, read '*Bal*, W. *ball*,'—p. 2, l. 2. read 'shovel;'—p. 3, l. 3 read 'q.v.'—p. 4, l. 25, the distorted word is '*hir*'—l. 28, read '*cether*'—p. 5, l. 6, read '*cas*, *berwy*, B. *kas*, *beler*.'—l. 12, read 'chatterer !,'—l. 13, delete second '*chee*'—l. 20, read '(St. Just).'  
—p. 10, l. 15, read 'DAME-KU.'—p. 11, l. 19, read '*drugal*,'—l. 20, read '*trôs*,'—l. 31, read '*ellek*, *illek*;'—l. 33, read '*rûth*,'—p. 12, l. 30, read '*fêr*,'—l. 32, read '*Mûs*.'

# ADDENDA.

GAJAH, GADGA. A corn-marigold (Breage, per Mr. E. Thurston). See GADGEVRAWS.

GAZOOPLY. To croon or lament. *Coselê*, *kesoly*, to soothe, to lull, W. *cysoli*; *dho gesoly*, to croon a lullaby.





2.  
REPORT

OF THE

Observatory Committee

OF THE

Royal Cornwall Polytechnic Society.

WITH

METEOROLOGICAL TABLES

FOR THE YEAR 1920 ;

Also Additional Meteorological Tables for Falmouth for the Lustrum  
1916-20, with means for 50 years (1871 to 1920),

AND

Tables of Sea Temperature,

BY

WILSON LLOYD FOX, F.R. Met. Soc.

(*Hon. Sec. Observatory Committee*),

AND

JOSHUA BATH PHILLIPS, F.R. Met. Soc.,

*Of the Meteorological Office Weather Station, Falmouth.*

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—  
1921.



# REPORT

OF THE

## OBSERVATORY COMMITTEE

OF THE

## ROYAL CORNWALL POLYTECHNIC

## SOCIETY

FOR THE YEAR 1920.

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### COMMITTEE :

H. DYKE ACLAND,  
F.G.S., F.S.A.  
MAJOR LUARD, R.E.  
COMDR. ARTHUR ROGERS,  
R.N.R., J.P.

WALTER ROGERS, B.A.  
F. J. WETHERED, M.D.,  
F.R.C.P.

WILSON LLOYD FOX, F.R. Met. Soc., J.P., *Hon. Sec.*

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The Observatory and garden have been maintained in good order.

Mr. Howard Fox, F.G.S., resigned his membership of the Committee in January, and F. J. Wethered, M.D., F.R.C.P., has been elected in his place. The cordial thanks of the Committee have been accorded to Mr. Fox for his long and valuable services extending over a period of 54 years. It may be of interest to recall that the original Committee (then called "Meteorological" but changed subsequently to "Observatory") was appointed on the 30th January,

1867, and held its first meeting on the 6th March in the same year. At the second meeting on 3rd April, Dr. Balfour Stewart, F.R.S., Director of the Kew Observatory, was present. On 6th January, 1870, the following members of the Society were elected on the Committee, viz., Rev. W. Rogers, Robert Fox, W. Slade Olver, John Stephens, Howard Fox, Robert M. Tweedy and W. Philip Dymond. On 11th January Messrs. John P. Bennetts, Arthur Willmore and Harry Tilly were added. Of this Committee Mr. Howard Fox is the sole survivor. In the autumn of 1877, Mr. Wilson L. Fox succeeded Mr. W. Philip Dymond as Hon. Sec.

Mr. W. J. Fowler left for South Farnborough on 20th March to act as clerk computer at the Meteorological Office there. Mr. J. E. Belasco, B.Sc., F.R.Met.Soc., was in residence from 3rd August until 27th September, and in charge of the Observatory from 5th August to 2nd September. During the rest of the year the Observatory has been in charge of Mr. J. B. Phillips, F.R.Met.Soc., with Mr. W. A. Toms as probationer. Mr. R. H. Brenton, on behalf of the Corporation of Falmouth, has continued to take the 6 p.m. observations and send off the telegraphic reports to the Meteorological Office.

The annual grant of £30 has been received from the M.O. and also the sum of £75 15s. 1d., being the balance due to your Committee for the expenses of the Observatory and premises to the 30th June, 1920. The accounts of the treasurer, Mr. W. W. J. Sharpe, have been audited by Mr. E. P. Kestin, to whom your thanks are due.

In consequence of a suggestion made at a recent annual meeting of the Society and with the sanction of the M.O. the Observatory has been open for inspection by visitors on the 2nd Friday of each month in the afternoon—a few have availed themselves of the opportunity.

Interesting particulars of the work accomplished at the Observatory will be found on page 83 of the 15th annual report of the Meteorological Committee to the Lords

Commissioners of His Majesty's Treasury for the year ending 31st March, 1920. In the same report there appear full details of the changes rendered necessary through the control of the Meteorological Office and of the other independent meteorological services established during the war, viz:—Of the Army, Navy and Air Force, and in addition the British Rainfall Organisation being transferred to the Air Ministry. Sir W. Napier Shaw, F.R.S., retired on the 6th September: your Committee have expressed to him their appreciation of the unfailing interest he evinced in the continuance of the Observatory at Falmouth which had been so closely connected with the Meteorological Office since 1868. They were pleased to have the opportunity of being connected with the proposed presentation of his portrait in oils by the staff of the M.O., “in recognition of the work he had done for the office and of the cordial relations which existed between the Director and his staff during his long term of office.” Dr. George C. Simpson, C.B.E., F.R.S., has been appointed by the Air Council to succeed him. He was the Meteorologist and Physicist attached to the Scott British Antarctic Expedition, 1910—1913.

The spare rain-gauge belonging to the Society has been lent to the Cornwall Rainfall Association and is in the possession of the Rev. W. Bevan Monger, the Vicar of Constantine, who expects shortly to commence observations.

Sea temperatures have been taken on board the tug “Durgan” by Capt. George White, near the centre of the Harbour; these have been tabulated by the Hon. Sec. and will appear in the annual report with the usual Meteorological tables and also tables for the Lustrum 1916—1920 and means for 50 years prepared by Mr. J. B. Phillips (to whom the cordial thanks of the Committee have been tendered) through the courtesy of the M.O., with notes by your Hon. Sec.

Telegraphic forecasts with introductory remarks on pressure distribution are received daily and exhibited together with the particulars of sunshine, temperature and



rainfall at the Custom House and Free Library. The anemograph chart from Pendennis Castle is exhibited at the Custom House each day. The "Western Morning News" and "Western Daily Mercury" have published daily climatological data, and the two Falmouth weekly newspapers, the "Falmouth Packet" and "Cornish Echo," have been furnished with weekly and monthly climatological tables. The information thus circulated is much appreciated by the public.

WILSON LLOYD FOX,

*Hon. Sec.*

## METEOROLOGICAL NOTES, 1920.

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**Pressure.**—The mean for the year, 1016·1 millibars (30·007 mercurial inches) was 0·9 mb. (0·27 ins.) above the average of the last 50 years 1871—1920. The maximum 1040·4 mb. (30·723 ins.) and the minimum 970·8 mb. (28·669 ins.) occurred on March 3rd and 14th respectively.

**Bright Sunshine.**—The 1508·1 hours were 245 less than the mean of the last 40 years 1881—1920 and fewer than for any year since 1881 with the exception of 1467·1 hours in 1912. A deficiency was experienced in every month excepting December which had an excess of  $4\frac{1}{2}$  hours. The daily average was 4·1 hours, being 42 minutes below the mean. Only 165·5 hours were recorded in July, a number less than in any July other than in the above-mentioned year, 1912, which had 154·7, and in 1914, when there were 164·6. The greatest amount in one day was 15·1 hours in June. The total number of days on which bright sunshine occurred was 308, or 4 above the mean. June had 29, whilst those in April, May, July, August, and September numbered 28 each. The least was registered in November, viz., 20, followed by January with 21, December with 22, and February with 23. May had the highest percentage of possible duration, 46, and January the lowest, 20.

**Temperature.**—The mean  $51\cdot4^{\circ}$  is the same as that for the years 1895, 1902, 1909, and 1918, and  $0\cdot7^{\circ}$  above the average of the 39 years, 1882—1920. The mean of July,  $58^{\circ}$ , is the lowest for that month during the same period. The nearest,  $58\cdot2^{\circ}$ , occurred in 1910. August, with a mean of  $57\cdot7^{\circ}$ , was the coldest except for  $56\cdot8^{\circ}$  in 1912. On the

other hand October was unusually warm, the mean being  $55.2^{\circ}$ . The absolute maximum of the year,  $70.1^{\circ}$ , which occurred in August, is the lowest recorded. The nearest approach was in 1890 with  $70.5^{\circ}$ . The high maximum of March,  $61.3^{\circ}$ , has been slightly exceeded on two occasions, viz: in 1895 with  $61.7^{\circ}$  and in 1918 with  $61.4^{\circ}$ . The maximum  $67.9^{\circ}$ , in July is the lowest, with the exception of  $65.7^{\circ}$  in 1888 and  $67.6^{\circ}$  in 1890. The absolute minimum,  $26.9^{\circ}$ , was registered on 17th December.

**Rainfall.**—This amounted to 1211.2 mm. (47.69 ins.) which was 52.8 mm. (2.08 ins.) above the average of the last 50 years, 1871—1920. The maximum fall in one day was 34.3 mm. (1.35 ins.) on 17th October. During the first 6 months 569.9 mm. (22.44 ins.) fell, and 641.3 mm. (25.25 ins.) in the last six. The fall of 203.2 mm. (8 ins.) in January was a record, the nearest approach being 200.9 mm. (7.91 ins.) in January 1900. The 140.7 mm. (5.54 ins.) of July were exceeded in 1888 when 145 mm. (5.71 ins.) fell. The particulars of the 4 heaviest rainfalls are as follows :—

30th September.—A continuous fall of 20 mm. (0.79 ins.) between 5.50 and 9.20 a.m. Of this 17 mm. (0.67 ins.) fell between 7 and 9 a.m. and 10 mm. (0.39 ins.) between 7.42 and 8.18 a.m., being at the rate of 19 mm. (0.75 ins.) per hour.

30th September—1st October.—A continuous fall of 24.6 mm. (0.97 ins.) between 11.20 p.m. of 30th September and 4.40 a.m. 1st October. Of this amount 22.7 mm. (0.89 ins.) fell after 1 a.m. Between 4.30 and 4.40 a.m., 7 mm. (0.28 ins.) fell, being at the rate of 42 mm. (1.65 ins.) per hour.

5th October.—A fall of 5 mm. (0.20 ins.) occurred between 6.15 and 6.30 a.m., being at the rate of 20 mm. (0.79 ins.) per hour; this was part of a continuous fall of 10 mm. (0.39 ins.) from 2.30 to 6.30 a.m. At 7.45 a.m.

there was a very heavy fall when 5 mm. fell in 3 minutes, being at the rate of 100 mm. (3·94 ins.) per hour.

17th October.—A total fall of 34·3 mm. (1·35 ins.) made up of a continuous fall of 10 mm. (0·39 ins.) between 2.40 p.m. and 4.35 p.m., and 24·3 mm. (0·96 ins.) between 5.40 p.m. and 8.30 p.m. This was the occasion when as reported by Mr. A. Pearse Jenkin (Hon. Sec. Cornwall Rain-fall Association) “a severe thunderstorm with remarkable rainfall passed over Mullion and adjacent parts of the County causing much damage.”

There were 199 rain days (i.e., days on which ·01 in. or more fell) being 9 below the mean of the last 50 years. January had the most, 27; and August the least, 8, which latter is a record, the nearest being 9 in 1886, 1887 and 1911 respectively. November, with so few as 10, has only been equalled in 1901. January, March, April, May, June, July and November were above the average, and the other six months below.

**Wind.**—The relative proportion of wind during the year 1920, and the mean relative proportion for 50 years, 1871—1920, was as follows:—

	1920.	1871 to 1920.
	%	%
Winds with N. component .. ..	20	24
Winds with E. component .. ..	16	16
Winds with S. component .. ..	29	26
Winds with W. component .. ..	35	34

The highest average hourly velocity of 27·5 metres per second (61 miles per hour) occurred at 11 a.m. of the 27th January with a Southerly wind. During this “whole gale” the maximum gust rose to 33·7 metres per second (75 miles per hour) at 10.15 a.m. The maximum gust of the year attained a velocity of 35·8 m.p.s. (80 m.p.h.) at 1.19 p.m. of the 30th November, when the highest average hourly velocity was 21 m.p.s. or 47 m.p.h. during a “strong gale” from the South.

## FALMOUTH SEA TEMPERATURES.

The Observations have been taken by Captain George White, of the tug "Durgan," near the centre of the Harbour during 1920. They have been compared with the mean and extreme values of the readings of maximum and minimum thermometers for the same days of each month at Falmouth Observatory. These thermometers are divided on the stem and verified and placed in a Stevenson Screen, at a height of four feet over grass,

1920.	Number of Daily Observations.	Means.	Mean Difference from Air.	Maximum.	Difference from Air.	Minimum.	Difference from Air.	Monthly Range.	Difference from Air.	Means for 41 years, 1872 to 1885 and 1894 to 1920.
January	27	46·8	+2·6	49·0	- 4·9	45·0	+16·8	4·0	-21·7	48·0
February	24	49·5	+3·5	50·5	- 5·3	48·5	+16·5	2·0	-21·8	47·0
March ..	27	50·3	+4·6	51·0	-10·3	48·5	+20·2	2·5	-30·5	47·3
April ....	26	51·5	+2·9	52·0	- 5·9	51·0	+15·0	1·0	-20·9	49·0
May ....	26	54·0	+0·5	59·0	-10·7	52·0	+11·1	7·0	-21·8	52·4
June ....	26	60·9	+2·7	62·0	- 7·0	59·0	+15·0	3·0	-22·0	56·0
July ....	27	60·0	+1·8	61·0	- 6·9	59·0	+11·0	2·0	-17·9	58·4
August ..	26	60·6	+3·2	61·5	- 8·6	58·5	+14·8	3·0	-23·4	59·9
September	26	60·6	+3·5	61·5	- 6·3	59·5	+16·6	2·0	-22·9	59·1
October ..	26	58·9	+3·7	60·5	- 5·4	57·0	+17·0	3·5	-22·4	56·9
November	26	56·8	+7·8	58·0	0·8	54·0	+16·0	4·0	-15·2	50·3
December	27	49·3	+5·9	54·0	- 2·1	47·0	+20·1	7·0	-22·2	50·1
Means ..	26	54·9	+3·6	56·7	- 6·1	53·2	+15·9	3·4	-21·9	52·9

MEAN MONTHLY and YEARLY TEMPERATURE of the SEA off Falmouth, during Lustrum 1916 to 1920, and during 41 years 1872 to 1885, and 1894 to 1920.

MONTH.	1916	1917	1918	1919	1920	Means	Means for 41 years.
January.. ..	50·3	46·5	45·2	48·3	46·8	47·4	48·0
February ..	48·3	41·9	48·8	45·3	49·5	46·8	47·0
March .. ..	45·4	44·3	48·2	47·3	50·3	47·1	47·3
April .. ..	50·0	47·1	49·9	49·7	51·5	49·6	49·0
May .. ..	54·6	54·0	54·0	54·9	54·0	54·3	52·4
June .. ..	56·3	59·4	57·3	58·5	60·9	58·5	56·0
July .. ..	59·4	61·8	58·5	59·7	60·0	59·9	58·4
August .. ..	62·3	51·7	60·5	62·3	60·6	61·5	59·9
September ..	59·7	59·6	58·0	60·4	60·6	59·7	59·1
October .. ..	57·6	57·4	55·0	55·4	58·9	56·9	56·9
November ..	52·6	52·8	51·8	50·5	56·8	52·9	50·3
December ..	48·8	47·8	51·8	49·2	49·3	49·4	50·1
Means .. ..	53·8	52·9	53·2	53·6	54·9	53·7	52·9

# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Mean and Extreme Pressure of the Air, Mean Amount of Cloud at 7 a.m., 1 p.m. and 6 p.m., and NUMBER OF HOURS OF BRIGHT SUNSHINE at FALMOUTH OBSERVATORY during 1920.

DATE.	PRESSURE OF AIR.							CLOUD, 0-10.			BRIGHT SUNSHINE.					
	Mean pressure of the Air, in millibars.	Absolute Maximum, in millibars.	Date of Maximum.	Absolute Minimum, in millibars.	Date of Minimum.	Extreme Monthly Range, in millibars.	Mean elastic force of Vapour, in millibars.	7 a.m.	1 p.m.	6 p.m.	Number of hours of Bright Sunshine.	Greatest amount in one day.	Number of days on which Bright Sunshine occurred.	Percentage of Possible Duration.	Mean number of hours of Bright Sunshine for 40 years, 1881-1920.	Mean number of days on which Bright Sunshine occurred in 40 years, 1881-1920.
January..	1014.4	1036.2	16	978.5	1	57.7	9.0	6.9	7.8	6.6	54.1	6.9	21	20	57.7	20
February	1023.4	1037.7	18	1004.6	17	33.1	9.5	7.1	7.7	6.9	67.8	9.4	23	23	81.6	21
March ..	1013.8	1040.4	3	990.8	14	69.6	9.2	7.6	7.0	6.3	117.1	10.1	27	32	137.1	26
April ..	1007.3	1035.5	24	979.2	12	46.3	10.1	8.2	8.1	6.4	136.3	12.0	28	33	186.4	27
May ..	1018.3	1037.0	5	993.1	2	43.9	11.3	6.7	6.1	5.3	220.9	13.9	28	46	227.4	28
June ..	1017.1	1031.4	1	1002.9	11	28.5	14.0	6.8	6.7	5.8	213.0	15.1	29	44	224.0	28
July ..	1014.8	1029.9	19	993.6	8	36.3	14.1	7.7	7.8	6.4	165.5	13.2	28	34	224.5	29
August ..	1021.3	1021.4	29	993.8	5	21.6	13.8	7.7	7.4	4.9	160.7	12.0	28	36	208.9	30
September	1018.2	1028.7	10	996.3	18	32.4	14.0	6.5	7.2	6.0	138.8	11.2	23	37	159.9	27
October ..	1011.6	1024.6	26	985.3	31	39.3	10.2	8.2	7.2	5.6	102.0	9.0	26	30	115.5	26
November	1017.4	1033.6	9	989.0	1	44.6	10.7	7.2	7.5	5.9	71.5	7.9	20	26	74.2	22
December	1015.5	1032.1	5	992.0	21	40.1	8.8	5.5	7.0	7.0	60.4	6.1	22	24	55.9	20
Sums or Means	1016.1							7.2	7.3	6.1	1508.1		308	32	1753.1	304

The readings of the Barometer are in millibars (1 mercury inch = 33.8632 millibars), and have been reduced to 32° F. at mean sea level and latitude 45°, and corrected for index error and capillarity. The extreme Maxima and Minima of barometric pressure are from the Dines Float Barograph, and have been standardised. The records of bright sunshine are from the Campbell-Stokes Sunshine Recorder. The results are published by permission of the Meteorological Office, Air Ministry, London. † 30.723 mercury inches, ‡ 28.667 mercury inches.



METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Table of Mean and Extreme Temperature of the Air and of Hygrometric Condition at Falmouth Observatory for 1920.

DATE.		TEMPERATURE OF AIR.								HYGROMETRIC CONDITION.											
		Mean of daily Maximum and Minimum, 1871-1920.	Mean of daily Maxima.	Mean of daily Minima.	Absolute Maximum.	Date of Maximum.	Absolute Minimum.	Date of Minimum.	Dry Bulb.				Depression of Wet.				Humidity. Complete Saturation = 100.				
		Mean of daily Maximum and Minimum.	Mean of daily Maxima.	Mean of daily Minima.	Absolute Maximum.	Date of Maximum.	Absolute Minimum.	Date of Minimum.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	7 a.m.	1 p.m.	6 p.m.	Means corrected for Diurnal Range			
1920.																					
January	..	..	44.4	43.4	49.3	39.5	53.0	16	28.2	7	44.5	47.2	45.1	1.5	2.5	1.8	88.0	82.7	86.1	85.6	86.1
February	..	..	46.1	43.4	50.7	41.4	56.8	19	32.0	22, 23.	44.5	49.4	46.4	1.1	2.7	1.7	91.9	82.4	88.2	87.5	88.4
March	..	..	45.5	43.9	51.5	39.5	61.3	30	28.3	9	43.2	49.7	46.5	1.2	3.2	1.9	90.4	79.0	86.0	85.1	86.5
April	..	..	48.7	47.5	54.1	43.2	57.9	25	36.0	1	46.4	52.7	49.9	1.3	3.6	2.6	90.5	77.6	82.7	83.6	86.0
May	..	..	53.4	52.2	59.3	47.4	69.7	26	40.9	21	51.9	56.9	55.1	2.3	4.7	4.0	84.9	73.1	75.9	78.0	81.5
June	..	..	58.3	57.1	64.3	52.3	69.0	24	44.0	5	56.9	62.1	59.8	1.8	4.3	3.5	88.0	76.6	79.7	81.4	85.1
July	..	..	58.0	60.1	63.2	52.8	67.9	21	48.0	27	56.3	61.7	59.2	1.5	4.0	3.2	89.5	77.8	81.5	82.9	86.8
August	..	..	57.7	60.1	63.6	51.7	70.1	14	43.7	20	55.6	61.8	59.4	1.2	4.5	3.7	91.6	75.0	78.6	81.7	84.8
September	..	..	57.2	57.0	63.3	51.0	67.8	5	42.9	20	54.5	61.1	57.7	0.9	3.7	2.5	94.3	78.8	84.9	86.0	87.9
October	..	..	55.2	51.7	59.7	50.7	65.9	9	40.0	19	53.7	57.8	55.0	1.0	2.3	1.6	93.5	86.0	89.7	89.7	91.8
November	..	..	48.9	47.2	54.2	43.6	57.2	13	38.0	6, 28.	47.8	52.9	49.3	1.2	2.9	1.7	91.2	81.7	88.2	87.0	87.7
December	..	..	45.3	44.8	48.0	38.6	56.1	25	26.9	17	43.0	46.3	43.4	1.5	2.7	1.7	87.2	80.7	85.7	84.5	86.1
Means..	..	..	51.4	50.7	56.8	46.0					49.9	55.0	52.2	1.4	3.4	2.5	90.1	79.3	83.9	84.4	86.5

The data are from Thermometers divided on the stem and verified and placed in a Stevenson Screen at a height of 4 feet over grass. The corrections for diurnal range of humidity are obtained from the 24 hour records of the photographic thermograph for 25 years 1886-1910. The results are published by permission of the Meteorological Office, Air Ministry, London.

# METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

RELATIVE PROPORTION OF DIRECTION OF WIND; Mean and  
Extreme VELOCITY OF WIND in metres per second, and Monthly and Yearly RAINFALL  
at FALMOUTH OBSERVATORY for 1920.

DATE.	WIND.										RAIN.							
	Relative proportion of				Highest average hourly velocity.		Direction of Maximum velocity.	Day and hour of Maximum velocity.		Maximum gust.		Day, hour and minute of maximum gust.	Rain.	Mean for 50 years, 1871—1920.	Greatest amount in one day.	Date.	No of rain days.	Mean No. of rain days for 50 years, 1871—1920.
					Metres per second.	Miles per hour.		Metres per second.	Miles per hour.									
1920.																		
January .. ..	5	2	9	15	27·5	61	S	27 11	33·7	75	27 10 15	8·00	4·71	1·23	11	27	20	
February .. ..	5	5	9	10	20·0	45	S W	10 5	25·0	56	10 10 25	0·99	3·88	0·25	10	13	17	
March .. ..	7	2	10	12	24·7	55	S	28 3	28·9	65	25 15 5	4·24	3·59	0·64	28	20	18	
April .. ..	1	9	13	7	24·0	54	S W	15 18	33·0	74	20 10 6	4·41	2·77	0·54	11	22	16	
May .. ..	6	5	7	13	20·7	46	S W	18 14	28·6	64	18 16 33	2·38	2·22	0·58	1	16	13	
June .. ..	5	6	10	9	15·4	35	S W	29 11	20·9	47	29 9 30	2·41	2·39	0·37	18	13	14	
July .. ..	5	-	7	19	17·8	40	S S W	1 18	23·3	52	1 17 43	5·54	2·97	0·96	1	23	15	
August .. ..	12	4	4	11	19·4	43	N N E	4 22	24·7	55	4 22 0	1·41	3·42	0·71	4	8	16	
September .. ..	9	3	6	12	18·8	42	W S W	18 14	27·3	61	18 13 50	3·15	3·34	0·83	30	11	16	
October .. ..	2	12	14	3	22·6	51	S	3 16	28·8	64	3 18 16	7·52	5·22	1·35	17	17	21	
November .. ..	6	5	10	9	21·0	47	S	30 13	35·8	80	30 13 19	2·15	5·00	0·31	16	10	19	
December .. ..	11	6	8	6	22·5	50	S W	3 5	29·0	65	3 4 35	5·49	6·10	0·72	31	19	23	
Sums .. ..	74	59	107	126								47·69	45·61			199	208	

The velocity of the wind is from the Dines Pressure Tube Anemometer at Pendenis Castle and is the average for 30 minutes before to 30 minutes after the hour. The direction of the wind is from the Robinson Anemometer at Falmouth Observatory. The Rainfall, measured in millimetres (1 in. = 25·4 mm.) is from the 11 inch self-recording Beckley Gauge, 2 feet above ground; the number of Rain Days are those on which 0·25 mm. (0·01 in.) or more, of rain was recorded; the values given are from midnight to midnight. The results are published by permission of the Meteorological Office, Air Ministry, London.

## METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Monthly totals of the HOURLY VALUES OF RAINFALL, (in millimetres) from the continuous records of the Beckley Rain Gauge at Falmouth Observatory for 1920.

1920.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	mm.	ins.
January..	11.2	7.5	11.2	11.3	7.6	10.2	17.6	14.3	19.1	9.5	17.3	13.4	4.4	5.4	3.2	1.7	2.9	4.3	6.0	7.4	6.7	6.4	6.5	5.1	203.2	8.00
February ..	0.2	2.1	1.3	0.6	1.1	1.7	1.2	1.3	0.7	0.5	0.7	0.4	0.9	0.3	0.2	0.6	2.7	3.4	1.7	0.9	0.6	0.8	0.9	0.6	25.2	0.99
March ..	6.1	4.6	2.4	2.9	1.3	3.0	2.4	3.1	4.2	5.2	6.3	5.4	7.8	3.5	10.7	5.8	9.2	9.4	5.3	2.3	1.3	1.3	1.7	3.6	107.8	4.24
April ..	7.1	4.8	3.9	5.1	5.8	3.2	7.1	4.9	2.8	3.3	3.3	2.0	3.6	6.4	9.6	6.3	2.2	5.7	0.7	3.4	5.2	4.8	5.8	5.0	112.0	4.41
May ..	2.9	2.7	0.6	3.6	3.8	1.5	2.2	0.7	0.2	0.3	1.0	2.6	5.7	3.2	1.7	4.2	3.1	3.5	6.5	4.5	1.5	0.6	1.9	1.9	60.4	2.38
June ..	0.5	0.7	0.9	5.1	1.7	2.1	1.3	1.4	6.9	1.4	1.3	1.4	3.6	0.8	0.8	2.1	4.6	3.1	1.2	4.4	3.5	3.3	7.0	2.3	61.3	2.41
July ..	5.0	4.6	4.2	3.2	8.1	4.4	6.3	6.5	5.1	5.1	2.7	8.7	11.3	11.7	11.4	7.3	2.6	5.4	4.6	1.1	2.5	9.5	6.3	3.1	140.7	5.54
August ..	1.3	—	—	0.5	0.1	0.3	2.0	0.1	1.2	0.6	0.8	0.8	2.4	3.9	0.9	1.5	1.6	2.3	1.5	1.4	2.2	3.7	4.2	2.5	35.8	1.41
September ..	2.2	0.5	1.6	2.7	3.2	9.2	5.8	15.2	4.0	1.3	4.6	2.9	0.2	—	—	0.9	5.9	0.8	2.9	1.6	6.5	3.8	2.4	1.7	79.9	3.15
October ..	7.4	9.6	12.7	12.5	13.6	14.4	11.6	21.1	14.0	6.4	7.6	2.2	3.2	0.1	6.8	9.9	1.7	11.2	13.9	6.4	1.3	1.1	0.7	1.6	191.0	7.52
November ..	1.9	1.6	1.4	1.0	1.7	3.2	1.3	1.7	1.6	0.7	1.8	3.3	5.7	2.3	2.4	2.0	4.1	4.8	4.6	1.6	1.0	1.7	0.8	2.3	54.5	2.15
December ..	9.2	5.8	7.0	8.8	4.9	6.4	1.9	2.7	3.0	2.0	2.4	4.6	3.2	2.4	2.5	1.5	1.7	10.4	9.6	9.9	11.9	5.3	9.0	13.3	139.4	5.49
Sums ..	55.0	44.5	47.2	57.3	52.9	59.6	60.7	77.3	56.8	36.1	49.8	47.7	52.0	40.0	50.2	43.8	41.2	64.3	58.5	44.9	44.2	42.3	47.2	43.0	1211.2	47.09
Sums ..	2.17	1.75	1.86	2.26	2.08	2.35	2.38	2.87	2.20	1.42	1.96	1.88	2.05	1.58	1.98	1.72	1.62	2.53	2.30	1.77	1.74	1.67	1.86	1.69		

The rain is measured in millimetres (1 in. = 25.4 mm.) and the hourly falls are the amounts registered as having fallen from half an hour before to half an hour after each hour. The results are published by permission of the Meteorological Office, Air Ministry, London.

METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE, 5° 5' W. Height, 167 feet above mean sea level.

Monthly Totals of HOURLY VALUES of BRIGHT SUNSHINE at Falmouth Observatory during 1920.

1920.	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Totals.
January..	..	..	..	..	1.2	6.5	8.6	8.1	7.8	8.8	7.3	5.0	0.6	..	..	..	..	54.1
February	..	..	..	0.7	4.6	6.8	7.1	7.4	7.5	8.1	9.9	9.5	5.9	0.3	..	..	..	67.8
March ..	..	..	0.1	3.4	9.6	11.7	13.2	14.0	13.1	13.4	11.2	10.4	10.5	6.3	0.2	..	..	117.1
April ..	..	0.4	3.8	8.3	8.0	10.6	11.8	12.3	13.0	12.3	13.4	13.5	14.1	10.8	4.0	..	..	136.3
May ..	..	3.9	12.7	14.4	15.0	14.3	18.0	17.2	16.0	17.7	18.4	19.0	19.2	16.6	13.7	4.8	..	220.9
June ..	0.1	7.0	11.9	14.6	15.8	14.2	15.4	15.0	16.0	16.1	16.3	16.9	15.5	15.3	11.6	9.8	1.4	213.0
July ..	..	5.2	9.5	10.1	10.1	11.1	11.4	12.0	14.4	14.0	11.7	12.2	16.0	13.4	9.7	4.7	..	165.5
August ..	..	0.5	4.4	8.9	10.7	8.5	10.8	12.3	12.9	15.5	14.9	16.2	16.1	15.6	12.2	1.2	..	160.7
September	..	..	0.8	7.0	12.6	13.7	14.2	13.4	14.2	14.0	13.4	14.2	11.4	9.0	0.9	..	..	188.8
October ..	..	..	..	0.4	5.0	8.4	10.9	11.6	14.1	13.4	12.3	13.0	10.9	2.0	..	..	..	102.0
November	..	..	..	..	3.8	9.0	10.4	10.0	8.8	10.2	10.1	7.2	2.0	..	..	..	..	71.5
December	..	..	..	..	0.1	7.1	9.1	10.8	10.3	9.4	8.1	5.4	0.1	..	..	..	..	60.4
Sums ..	0.1	17.0	43.2	67.8	96.5	121.9	140.9	144.1	148.1	152.9	147.0	142.5	122.5	89.3	52.3	20.6	1.4	1508.1

The records of Bright Sunshine are from the Campbell-Stokes Sunshine Recorder. The instrument in use is the property of the Meteorological Office, Air Ministry, London, by whose permission the results are published.

TABLE OF BRIGHT SUNSHINE RECORDED AT FALMOUTH OBSERVATORY  
for the Lustrum, 1916—1920 ; also MEANS for 40 Years, 1881—1920.

MONTH.	NUMBER OF HOURS OF BRIGHT SUNSHINE.						PERCENTAGE OF POSSIBLE DURATION.						NUMBER OF DAYS OF BRIGHT SUNSHINE.					
	YEARS.						YEARS.						YEARS.					
	1916	1917	1918	1919	1920	Means. 1881—1920.	1916	1917	1918	1919	1920	Means for 40 years 1881—1920.	1916	1917	1918	1919	1920	Means 1881—1920.
January ..	58.1	47.9	67.2	67.8	54.1	57.7	20	18	25	26	20	22	23	19	21	21	21	20
February ..	75.8	71.2	45.6	59.8	67.8	81.6	26	25	16	21	23	22	29	23	19	18	23	21
March ..	118.7	143.7	136.3	135.3	117.1	137.1	32	39	37	37	32	35	38	24	27	31	27	26
April ..	261.6	286.1	188.2	178.9	136.3	186.4	64	57	46	44	33	49	45	29	30	25	28	27
May ..	168.1	198.9	241.6	184.1	220.9	227.4	35	42	51	39	46	43	48	26	31	28	28	28
June ..	212.2	218.9	286.4	229.6	213.0	224.0	44	45	59	47	44	48	46	28	29	29	29	28
July ..	270.5	198.0	268.6	245.0	165.5	224.5	55	39	68	50	34	46	46	31	28	30	29	29
August ..	213.3	184.2	156.5	226.6	160.7	188.3	48	41	35	51	36	40	47	30	30	28	29	30
September	136.8	121.9	135.5	143.8	138.8	159.9	36	32	36	38	37	36	43	28	26	27	25	27
October ..	86.5	105.9	108.3	138.9	102.0	111.8	26	32	31	48	30	33	35	26	27	29	26	26
November ..	56.9	38.3	80.5	71.1	71.5	63.7	21	14	30	20	26	23	28	20	18	24	20	22
December ..	70.4	22.3	52.3	58.7	60.4	61.8	28	29	21	21	24	25	23	24	26	19	22	20
Sums or Means ..	1723.9	1682.3	1752.0	1754.6	1508.1	1674.1	36	84	37	37	32	35	38	312	310	305	308	304

The Records of Bright Sunshine are from the Campbell-Stokes Sunshine Recorder. The instrument in use is the property of the Meteorological Office, Air Ministry, London, by whose permission the results are published.

MEAN MONTHLY AND YEARLY PRESSURE OF THE AIR AT FALMOUTH (in millibars) for the Lustrum 1916 to 1920, and also for the 50 years 1871 to 1920.

MONTHS.	1916	1917	1918	1919	1920	Mean.	Mean for 50 years 1871-1920.
January .. .. .	1024.3	1013.8	1014.7	1008.4	1014.4	1015.1	1016.7
February .. .. .	1009.8	1020.1	1022.8	1006.1	1023.4	1016.4	1015.5
March .. .. .	1004.2	1011.6	1016.8	1010.9	1013.8	1011.3	1013.7
April .. .. .	1014.8	1015.9	1013.9	1018.1	1007.3	1014.0	1013.7
May .. .. .	1013.5	1014.4	1017.8	1017.2	1018.3	1016.2	1016.0
June .. .. .	1015.5	1017.1	1021.3	1023.2	1017.1	1018.8	1016.8
July .. .. .	1018.8	1018.6	1014.7	1019.6	1014.8	1017.3	1016.3
August .. .. .	1014.4	1008.4	1018.4	1018.0	1021.3	1016.1	1015.5
September .. .. .	1018.3	1019.2	1009.2	1017.0	1018.2	1016.4	1016.7
October .. .. .	1011.9	1011.0	1017.1	1022.8	1011.5	1014.9	1013.6
November .. .. .	1007.8	1023.2	1017.2	1010.3	1017.4	1015.2	1014.1
December .. .. .	1004.4	1024.1	1012.9	1012.1	1015.5	1013.8	1013.6
Means .. .. .	1013.1	1016.4	1016.4	1015.3	1016.1	1015.3	1015.2

MEAN MONTHLY AND YEARLY TEMPERATURE AT FALMOUTH for the Lustrum 1916 to 1920, and also for the 50 years 1871 to 1920.

MONTHS.	1916	1917	1918	1919	1920	Mean.	Mean for 50 years 1871-1920.	Mean Daily Range of Temperature 1871-1920.
	°	°	°	°	°	°	°	°
January .. .. .	47.8	38.6	43.0	41.6	44.4	43.1	43.4	7.0
February .. .. .	42.1	38.4	46.8	42.2	46.1	43.1	43.4	7.3
March .. .. .	40.6	42.1	44.8	42.8	45.5	43.2	43.9	8.8
April .. .. .	47.7	43.8	47.0	46.4	48.7	46.7	47.5	9.7
May .. .. .	52.3	53.8	54.2	54.1	53.4	53.6	52.2	10.6
June .. .. .	54.2	57.9	56.9	57.2	58.3	56.9	57.1	10.8
July .. .. .	60.5	60.9	60.4	59.6	58.0	59.9	60.1	10.7
August .. .. .	63.1	59.6	60.8	62.8	57.7	60.8	60.1	10.3
September .. .. .	57.7	57.6	55.9	57.3	57.2	57.1	57.0	9.3
October .. .. .	54.7	49.2	50.9	49.7	55.2	51.9	51.7	8.5
November .. .. .	46.8	49.1	47.5	41.9	48.9	46.6	47.3	7.6
December .. .. .	40.8	40.3	48.2	46.4	43.3	41.8	44.8	7.2
Means .. .. .	50.7	49.4	51.4	50.2	51.4	50.4	50.7	9.0



MONTHLY AND YEARLY RAINFALL (in inches) recorded at FALMOUTH OBSERVATORY for the Lustrum 1916 to 1920, and also Mean for the 50 years 1871 to 1920.

MONTHS.	1916	1917	1918	1919	1920	Means.	Means for 50 years 1871-1920.	Mean No. of Rain Days 1871-1920.
	ins.	ins.	ins.	ins.	ins.	ins.	ins.	ins.
January ..	2.26	2.82	5.31	7.30	8.00	5.14	4.71	20
February ..	7.65	1.18	3.66	6.17	0.99	3.93	3.88	17
March ..	5.57	4.16	1.83	6.00	4.24	4.36	3.59	18
April ..	1.32	1.80	1.97	3.08	4.41	2.52	2.77	16
May ..	1.47	2.06	1.15	1.94	2.38	1.80	2.22	13
June ..	2.11	3.04	1.01	0.97	2.41	1.91	2.39	14
July ..	1.37	1.31	3.25	0.85	5.54	2.47	2.97	15
August ..	3.17	6.25	2.34	3.88	1.41	3.41	3.42	16
September..	1.78	2.16	3.34	1.83	3.15	3.45	3.34	16
October ..	6.91	7.39	3.52	1.61	7.52	5.39	5.22	21
November ..	8.46	2.18	3.88	3.75	2.15	4.08	5.09	19
December ..	6.29	1.83	8.30	7.66	5.49	5.91	6.10	23
Totals..	48.36	36.18	44.56	45.04	47.69	44.37	45.61	208

MEAN MONTHLY AND YEARLY HUMIDITY AT FALMOUTH for the Lustrum 1916 to 1920, and also for the 50 years 1871 to 1920.

MONTHS.	1916	1917	1918	1919	1920	Means.	Mean for 50 years 1871-1920.
	%	%	%	%	%	%	%
January ..	87	82	88	87	86	86	85
February ..	84	83	90	86	88	86	84
March ..	84	82	85	83	87	84	82
April ..	80	78	81	81	86	81	81
May ..	85	85	82	87	82	84	80
June ..	80	82	74	80	85	80	81
July ..	82	85	82	80	87	83	81
August ..	85	87	86	82	85	85	84
September ..	86	91	86	85	88	87	85
October ..	88	87	88	83	92	88	85
November ..	87	90	87	85	88	87	84
December ..	88	83	92	88	85	87	85
Means ..	85	84	85	84	87	85	83

A correction for Diurnal Range has been applied since 1913 to the observations at 7 a.m., 1 p.m. and 6 p.m., based on the 24 hour records of the photographic thermograph 1886-1916.

MEAN RELATIVE PROPORTION of DIRECTION of WIND recorded at Falmouth Observatory for the Lustrum 1916 to 1920 and also for 50 years 1871—1920.

MONTHS.			Winds with N component.		Winds with E component		Winds with S component.		Winds with W component.	
			1916-20	1871 to 1920	1916-20	1871 to 1920	1916-20	1871 to 1920	1916-20	1871 to 1920
			days	days	days	days	days	days	days	days
January	..	..	6.2	6.6	6.0	5.3	9.6	8.9	9.2	9.9
February	..	..	6.0	6.2	5.8	5.2	9.0	8.0	7.6	8.8
March	..	..	10.2	8.4	5.6	5.5	6.8	7.2	8.4	9.9
April	..	..	10.4	8.1	5.0	6.0	5.4	6.9	9.2	9.0
May	..	..	7.2	7.7	8.2	6.3	7.2	7.6	8.4	9.4
June	..	..	9.6	7.1	3.6	4.7	6.0	7.6	10.8	10.6
July	..	..	7.0	7.4	3.6	3.0	7.8	7.7	12.6	12.9
August	..	..	7.8	6.5	3.4	3.8	7.0	8.5	12.8	12.2
September	..	..	6.6	7.1	4.0	5.5	7.6	7.6	11.8	9.7
October	..	..	7.0	7.5	6.4	5.6	9.8	8.3	7.8	9.5
November	..	..	7.0	7.6	5.4	5.4	7.6	7.2	10.0	10.0
December	..	..	7.8	6.8	3.4	4.2	8.0	8.4	11.8	11.3
Sums	..	..	92.8	67.0	60.4	60.5	91.8	93.9	120.4	123.2



# REPORT

OF THE

Observatory Committee and of the  
Joint Observatory Committee

TO THE

Royal Cornwall Polytechnic Society,

WITH

Report of the Cornwall Rainfall  
Association,

AND

Meteorological Notes and Tables

FOR THE YEAR 1921,

BY

WILSON LLOYD FOX, F.R. Met. Soc.,

Hon. Sec. Observatory Committee,

A. PEARSE JENKIN,

Hon. Sec. Cornwall Rainfall Association,

AND

JOSHUA BATH PHILLIPS, F.R. Met. Soc.,

Superintendent at the Observatory.

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FALMOUTH :

Printed by J. H. LAKE & Co., Market Strand.

1922.



# REPORT

OF THE

## OBSERVATORY COMMITTEE

AND OF THE

## JOINT OBSERVATORY COMMITTEE

TO THE

## ROYAL CORNWALL POLYTECHNIC

## SOCIETY

FOR THE YEAR 1921.

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### JOINT COMMITTEE :

H. DYKE ACLAND,  
F.G.S., F.S.A.  
MAJOR LUARD, R.E.  
COMDR. ARTHUR ROGERS,  
R.N.R., J.P.  
WALTER ROGERS, B.A.  
F. J. WETHERED, M.D.,  
F.R.C.P.

R. BARCLAY FOX.  
W. W. J. SHARPE,  
Honorary Treasurer.  
HIS WORSHIP THE MAYOR,  
JOHN HARRIS.  
THE DEPUTY MAYOR,  
R. E. GILL, M.R.H.S.

WILSON LLOYD FOX, F.R. Met. Soc., J.P., Hon. Sec.

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In January Mr. R. G. K. Lempfert, M.A., C.B.E., Director for Administrative and Contributive Stations of the M.O. interviewed the committee. He explained that owing to the control of the M.O. having passed to the Air Ministry he had been commissioned by Dr. George C. Simpson, C.B.E., D.Sc., F.R.S., Director of the M.O., to report on the situation with the view of coming to a fresh arrangement. He prepared a report and your committee were in accord with the recommendations therein. Correspondence ensued in which Dr. Simpson reviewed the situation and explained the various reasons which he feared



would reluctantly compel the Meteorological Committee to recommend to the Air Ministry that six months' notice should be given to the Polytechnic Society of termination of the agreement with them, and that the Air Ministry do not continue to support the Meteorological work financially at the end of that period.

Your honorary secretary expressed the profound regret of your committee at the prospective termination of the agreement, a connection which had extended over 53 years and which they felt had been productive of great benefit to the cause of Meteorology throughout the country as well as in the more immediate neighbourhood, and he urged that in the interest of continuity it would be very desirable that the work should be continued. Subsequently a letter was received from the Air Ministry stating that in view of the changed circumstances, and of the urgent need for economy, the Meteorological Committee had been unable to recommend the Air Council to continue the agreement, and giving notice terminating the same on 31st December, 1921.

The honorary secretary prepared a statement of facts with suggestions for the future which was submitted to the Executive Committee of the Society and considered by them and adopted. They were to the effect *inter alia*, explaining the scheme by which the Society would allow the use of the premises free of rent, and Mr. Phillips would consent to carry on the work (as would enable the Falmouth records to appear in the publications of the M.O. with those for other Health Resorts) in consideration of his occupying the premises free of rent, rates and other charges. It was mentioned that there was the prospect of the loan of the instruments being granted by the M.O. and it was suggested that the Town Council might consider the continuance of the Meteorological work with a grant in aid from the Council in the interest of Science and pre-eminently in that of Falmouth as a Health Resort. On the 5th August, the Observatory Committee met the Polytechnic Executive Committee and considered the report of a Polytechnic Sub-Committee which had inquired into the financial position of the Society. It was subsequently arranged that the Observatory Committee, with the addition of Messrs. R. B. Fox and W. W. J. Sharpe (hereinafter called the Polytechnic Sub-Committee) should attend the meeting of the General Purposes Committee of the Town Council, to be held on the 30th August. This they did when it was resolved that the Corporation agreed generally to the suggestion of the Polytechnic Society as regards the continuance of the Falmouth Observatory

at a cost to the Council not exceeding £130 per annum, and that the Mayor and Deputy-Mayor for the time being should be the representatives of the Town Council to meet the Observatory Committee and to represent the Council afterwards on that committee.

On the 2nd September this resolution was brought before the Executive Committee and on the 6th September the Polytechnic Sub-Committee, and the Mayor (Mr. Cuthbert Lloyd Fox) and the Deputy-Mayor (Mr. Mervyn Stewart) with the Town Clerk and Borough Surveyor met at the Observatory and discussed inter alia, the items of the estimate composing the £130. Mr. W. L. Fox consented to act as honorary secretary and Mr. Sharpe as hon. treasurer. A report of this Committee, called "the Joint Observatory Committee" was drawn up, dated 7th October, and was approved by the Society on that day. A copy was presented to the Town Clerk on the 10th October. The report contained the arrangements made for the future and for the periodical payment in discharge of the £130, or of so much thereof as should be required.

On the 13th September the Town Council confirmed the resolution passed by the General Purposes Committee as mentioned above.

On the 4th October the Borough Surveyor prepared two estimates of the necessary repairs and painting as follows :—External, £39 12s. ; internal, £45 ; total, £84 12s.

Advantage was taken of the presence of Major A. H. R. Goldie (Superintendent of Distributive Stations at the M.O.) to have the self-recording photographic Barograph and Thermograph removed to London on the 11th October as they had been out of use for a considerable time and the space occupied by them was needed.

During November the hon. secretary received a letter from Dr. Simpson granting the loan of the instruments, etc., to the Society on condition that Climatological Observations in standard form were regularly supplied to the M.O. A copy of the list of instruments was handed to the Town Clerk, who was also informed that Dr. Simpson had agreed to pay £80, to cover all claims for delapidations and renovations on vacation.

The Borough Surveyor subsequently met Mr. F. S. Clift at the Observatory and with Mr. Phillips and the hon. secretary arranged with him to commence the work forthwith.

On 1st December, the Mayor and Deputy-Mayor were shown over the Observatory and were informed that

Mr. Phillips would dispense with Mr. Brenton's services after 1st January, and that he (Mr. Phillips) would be responsible for a suitable substitute.

On the 8th December the hon. secretary at the request of the Mayor, attended a meeting of the General Purposes Committee and explained various matters over which misunderstanding had arisen.

On the 13th December the Town Council passed the following resolution "That the Council agree to contribute a sum not exceeding £130, towards expenses for one year only, and the matter will be re-considered at the expiration of the year."

Mr. R. L. Sims, Technical Assistant of the M.O. was in attendance at the Observatory from 9th September to 14th December.

During that time he superintended the starting of the weather station at Pendennis Castle. The reports from that station appeared for the first time in the Daily Weather Report of the M.O. of the 1st December and have continued ever since.

The climatological observations from the Observatory were inserted in the Daily Weather Reports of the 15th December, being their first appearance there with those from Health Resorts, of which the other Cornish stations are Bude and Penzance.

The following official notice of the Meteorological Office, respecting the Falmouth Observatory from the Meteorological Magazine for February, 1921, will be read with interest:—"Meteorological observations have been carried on at Falmouth since the founding of the Royal Cornwall Polytechnic Society in 1833. In 1867 the Meteorological Committee of the Royal Society recognised Falmouth as one of the seven Observatories of their network and provided the necessary equipment. The first site of the Observatory was in the town at 200 feet above sea-level. From 1885 a house with less urban surroundings (167 feet above M.S.L.) has been used. The situation is charming as may be gathered from the illustration in the official list of stations (001 J. 1919). Since 1902 there has been a Dines anemometer at Pendennis Castle on an exposed headland a mile from the Observatory, and the comparison of wind-records from the two stations has been of great interest.

Mr. J. Lovell Squire was the first superintendent of the Observatory; he was succeeded in 1882 by Mr. Edward Kitto, who held the position until 1913. On Mr. Kitto's retirement it was arranged that the Society should lend the Observatory

premises to the Meteorological Committee, who should be responsible for the staff, equipment, and work. Up to this time the preparation of hourly values from the autographic records had been the principal part of the meteorological work, but under the new plan the Observatory became a telegraphic reporting station. The photographic barograph and thermograph were dismantled and magnetic observations ceased, it being intended to develop the station as a centre for upper-air observations.

At the end of the year 1921, the Meteorological Office gave up its tenancy of the Observatory, and observations for the daily weather service are now being made at the coast-guard station at Pendennis Castle. The Royal Cornwall Polytechnic Society propose, with the assistance of the Town Council, to carry on climatological observations at the observatory, for the present year at least, and these will be published in the *Daily Weather Report* under the heading 'Health Resorts.' Mr. J. B. Phillips, who has been acting as meteorologist in charge of the station for some time, has been so good as to volunteer to take charge of this work."

The balance of £127 13s. 1d. due from the Meteorological Office for the year ending 30th June, 1921, was paid as to £124 5s. 1d. on 27th October, leaving a balance of £3 8s. to be carried over to the next account.

The renovation of the premises internally was commenced in December, and the inventory of the furniture and effects was checked on Mrs. Tresidder and her daughter leaving on the 8th of that month.

In consequence of the need to exercise economy, the taking of Sea Temperatures will be discontinued as from the 31st December, and none will be published with this year's Meteorological Tables. Capt. George White, of the tug "Durgan," has been thanked for the careful and regular manner in which he has made the observations.

The Meteorological Office has continued to send daily Telegraphic Forecasts, with introductory remarks on pressure distribution, which have been exhibited together with the particulars of sunshine, temperature and rainfall at the Custom House and Free Library. The Anemograph Chart from the Dines Anemometer at Pendennis Castle has been exhibited at the Custom House each day. The "Western Morning News and Mercury" has published daily climatological data, and the "Falmouth Packet" and "Cornish Echo" have been furnished with weekly and monthly climatological tables.

WILSON LLOYD FOX,

*Hon Sec.*

## Cornwall Rainfall Association.

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### REPORT for 1921, of Mr. A. Pearse Jenkin, Honorary Secretary.

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At the end of the year there were 28 subscribers, two having discontinued and 6 having joined in the course of the year.

With much regret the death has been recorded of Mr. E. B. Beauchamp, a rainfall Observer of very long standing. It is satisfactory, however, to find that the record is being continued by Mr. Charles Beauchamp.

Some rain gauges have been obtained by the Association, some of which are still in hand.

New returns have been received during 1921 from Mr. J. Hitchens, St. Agnes; Mr. A. Mayne, Pons-a-Verran, Constantine; General Hext, Trewornan; Mr. J. W. Tyacke, Helston and Mr. R. R. Blewett, St. Day; the last being an entirely new record. Two new records are promised for 1922, one at Devoran and one at Creed.

The ordinary receipts during the year amounted to £10 10s. 6d. including three subscriptions paid in advance and the ordinary payments to £7 16s. 9d. In addition to the above figures there has been an expenditure of £11 9s. 4d. on new rain gauges which has been met out of the balance of £15 15s. 10d. in hand at the end of 1920. The credit balance therefore at the end of 1921 is £4 6s. 6d.

The following subscribed £1 :—Mr. Lewis C. Foster and Falmouth Water Works Co.; 10s. 6d., Falmouth Observatory; 10s., Mr. E. B. Beauchamp (the late), Miss Rashleigh and Mr. P. D. Williams; 5s., Mr. T. R. Bolitho, Mr. E. C. Baron Letehbridge, Mr. J. G. Marsdon, Mr. R. Wadham Martyn, Mr. T. Field Michell, Mr. Ed. Leamon, Mr. Reg. R. Rogers, Com. Arthur Rogers, Mr. R. B. Rogers, Mr. N. R. Rosekilly, Mr. J. Gilbert Stephens, Rev. John W. Timson, Dr. W. C. Whitworth, Rev. R. F. Moody, Mr. Wilson L. Fox, Major A. A. Dorrien-Smith, Mr. George T. Skilbeck, Mrs. Braddon, Mr. John Hitchins, Mr. R. R. Blewett, Mr. A. Mayne, Gen. Hext, Rev. G. T. C. Pearce (1922), Mr. J. W. Tyacke (1922), and Mr. W. Garneys Wales.



# METEOROLOGICAL NOTES, 1921.

The year was remarkable in many respects, as will be seen on inspection of the tables (prepared by Mr. J. B. Phillips) which follow these notes by comparing the results with those of the means and extremes ranging from 40 to 50 years.

The prevailing anticyclonic conditions throughout the year, which were especially marked during February, April and June, resulted in pressure, sunshine and temperature being above the average with an unusual frequency of Northerly winds and a rainfall 37% below the mean.

**Pressure.**—The mean was 1020·2 millibars (30·126 mercurial inches), being a record, and 5·0 mb. (0·15 in.) above the average of the last 50 years. The nearest approach was in 1896, 1018·0 mb. (30·064 in.). The maximum of 1046·0 mb. (30·890 in.), occurring on 24th February, has been exceeded on six occasions. The highest reading since 1871 was 1052·9 mb. (31·097 in.) on 28th January, 1905. The minimum for the year was 988·6 mb. (29·198 in.) on 31st January. This was exceptionally high. Only once before since 1871 has the barometer remained above 948·2 mb. (28 in.) throughout the year. This was in 1878 when the lowest reading was 982·9 mb. (29·027 in.) on 7th October.

**Bright Sunshine.**—The number of hours was 1816·9 or 63·7 above the mean of the 40 years 1881—1920, and more than in any year since 1911, which had 2055·5. January, February, March, August, October, November and December were below the average, and April, May, June, July and September above. The greatest amount in one day was 14·7 hours in June. The most previously recorded being 15·5 in July, 1898. Bright sunshine occurring on 315 days was in excess of the mean by 11 days. The percentage of possible duration 40% was 2% above the mean. April, with 60%, had the highest, which was 6 less than the record for that month recorded in 1893 and 1906. The lowest percentage was in January, viz., 16, followed by December with 18..

**Temperature.**—The mean of 53·6° was equalled in 1893, exceeded by 0·2° in 1899, and was 2·9° above the average of the last 50 years. Every month showed an excess, January, July and October being respectively as much as 4·2°, 5·6° and 5·7° above the mean. January with 47·6° compares with two higher, viz., 48° in 1898, and 47·8° in 1916. The Greenwich January mean of 45·4° was stated to be the warmest during the last 80 years. The 65·7° of July has been exceeded on two occasions. In 1887 (Jubilee year) 65·8° were recorded and in 1911,



67·2°. October created several records, its mean temperature of 57·4° being 1·5° higher than the previous highest 55·9° in 1898. The three weeks from 2nd to 22nd were remarkably uniform, being 6·9° above the mean for that period and 7·2°, 6·7° and 6·8° for the respective weeks, whilst the fourth week was 1·5° above the mean. The mean temperature of the day was below 50° on two occasions only, the 24th and 25th. On the 24th the minimum was 34·1°, the only instance when the thermometer in the screen fell below 40°. The highest mean temperature for December 49·0° occurred in 1898. The nearest approaches were 48·6° in 1900, 48·7° in 1912 and 48·2° in 1918 and 1921. The maximum of the year was 82·8° on 18th July being the highest registered at Falmouth Observatory, the previous record being 82·5° in 1882. The maximum had not reached 80° since 1911 except in August, 1916, when it was 80·2°. Since 1885 the maximum has been recorded above 80° on only four occasions, or an average of about once in nine years. This indicates the very fallacious nature of the oft expressed impression that the South West coast of Cornwall must be extra warm in summer. This delusion is further evidenced by a comparison with the high maximum which occurred during July in other parts of England where temperatures reached 90° during July and even at Aberdeen the thermometer registered 84°. The monthly maximum temperatures were also remarkable, that of April 66° has only twice been exceeded; that of May 73·8° only once; that of June 77·0° only twice, and those of July 82·8° and of October 72° are the highest recorded at Falmouth Observatory, whilst the 80·2° of August was the same as the previous record in 1916. When the minimum temperatures are considered the mildness of the winter is very noticeable. The only occasions on which the temperature fell below freezing point were once in February, when the reading was 31·1° and three times in November where the lowest was 29·2°. In July the temperature did not fall below 51° and the highest minimum was 65°. The October minimum, 34·1° occurring on 24th, was the only instance during that month when the thermometer on the screen fell below 40°.

**Rainfall.**—The total 733·9 millimetres (28·9 in.) was 424·6 mm. (16·7 in.) less than the mean of the 50 years (1871–1920), being considerably the lowest since 1887 which had 706·9 mm. (27·8 in.). The highest during the same period was 1897·1 mm. (58·9 in.) in 1882 or a difference of 790·2 mm. (31·1 in.). During the first six months 294·6 mm. (11·6 in.) fell and during the last 439·2 mm. (17·3 in.).

The greatest amount in one day was 27·4 mm. (1·08 in.), which occurred on 9th October. On only two occasions in February has there been less than 13·6 mm. (0·53 in.), the first in 1891 with 1·5 mm. (0·06 in.) and the second in 1895 with 2·0 mm. (·08 in.). In 1895 the September rainfall was 10 mm. (0·39 in.) in 1910, it was 11 mm. (0·43 in.) and in 1921 it was 19 mm. (0·75 in.). The periods of Drought, 1921, are very noticeable. Drought—February 9th to 22nd ; June 6th to 24th ; September 18th to October 1st. Partial Drought—May 30th to July 22nd (54 days) a daily mean of 0·19 mm. (·007 in.).

The Rain Days, i.e. those on which 0·25 mm. (·01 in.) or more fell, numbered 186 or 22 less than the 50 years mean. December had the most with 25, and June the least with three which is the fewest since 1887, when there were two only. The mean Humidity for April was 76% showing an unusual dryness of the air. On twelve days during the month at 1 p.m. it was below 60%, the lowest being 48% on 25th. The mean Humidity for that month has been 76% or below, seven times since 1871, the lowest being 73% in 1906.

**Wind.**—The relative proportion of the wind was :—

	1921		1871 to 1920	
	Days	%	Days	%
Winds with N. component	.. 114	31	.. 114	24
Winds with E. component	.. 64	18	.. 64	16
Winds with S. component	.. 73	20	.. 73	26
Winds with W. component	.. 114	31	.. 114	34

The above table demonstrates the unusual frequency of Northerly winds, which in this district, as before alluded to, are synonymous with fine and dry weather and account for the small rainfall and extra amount of sunshine in 1921. The following table relating to 1920, when the weather was of a very different type, further exemplifies this. It shows an increased difference of 34 days in the South component and a still more striking diminution of 40 days in the North component, resulting in an excess of rainfall and a falling off of sunshine from the mean. A comparison with the percentage for the last fifty years is interesting, thus :—

	1920		1871 to 1920	
	Days	%	Days	%
Wind with N. component	.. 74	20	.. 74	24
Wind with E. component	.. 59	16	.. 59	16
Wind with S. component	.. 107	29	.. 107	26
Wind with W. component	.. 126	35	.. 126	34

The highest average hourly velocity was 24·6 metres per second (55 miles per hour) in a South-Westerly gale on 28th March. The maximum gust was 34·2 metres per second (77 miles per hour) being the highest gust of the year.

TABLE I.  
METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Mean and Extreme Pressure of the Air, Mean Amount of Cloud at 7 a.m., 1 p.m. and 6 p.m., and NUMBER OF HOURS OF BRIGHT SUNSHINE at FALMOUTH OBSERVATORY during 1921.

DATE.	PRESSURE OF AIR.						CLOUD, 0-10.			BRIGHT SUNSHINE.					
	Mean pressure of the Air, in millibars.	Absolute Maximum, in millibars.	Date of Maximum.	Absolute Minimum, in millibars.	Date of Minimum.	Monthly Range, in millibars.	Mean for 50 years 1871-1920 in millibars.	7 a.m.	1 p.m.	6 p.m.	Number of hours of Bright Sunshine occurred.	Percentage of Possible Duration.	Mean number of hours of Bright Sunshine for 40 years, 1881-1920.	Mean number of days on which Bright Sunshine occurred in 40 years, 1881-1920.	
January..	10.7-5	1035.5	26	998.6	31	46.9	1016.7	7.7	8.9	7.7	41.1	5.0	57.7	20	
February..	10.2-8	1046.0	27	996.8	1	49.2	1015.5	7.6	7.7	6.1	71.8	9.7	81.6	21	
March ..	1018.7	1029.2	31	991.7	29	37.9	1013.7	7.9	7.8	6.4	122.3	11.3	137.1	26	
April ..	1021.1	1031.0	5	996.7	17	33.3	1013.7	4.8	5.4	3.6	249.6	12.9	186.4	27	
May ..	1015.2	1026.7	21	994.0	8	32.7	1016.0	5.9	6.7	4.5	232.5	14.5	227.4	28	
June ..	1022.8	1029.7	16	1013.8	8	15.9	1016.8	5.9	5.9	3.5	284.6	14.7	221.0	28	
July ..	1018.2	1029.5	21	980.4	28	40.1	1016.3	5.2	4.7	4.0	271.7	14.6	224.5	29	
August ..	1015.0	1023.8	26	10.4.2	11	19.1	1015.5	6.0	7.3	6.7	159.2	11.4	208.9	30	
September ..	1019.9	1031.5	22	1001.7	11	29.8	1016.7	5.3	5.5	5.3	174.9	11.7	159.9	27	
October ..	1021.8	1036.8	28	1004.5	2	32.3	1013.6	7.5	7.3	6.4	110.7	8.5	115.5	26	
November ..	1016.0	1033.8	9	997.1	30	36.7	1014.1	7.4	8.3	9.1	53.1	8.3	74.2	22	
December ..	1020.9	1035.1	31	998.1	1	37.0	1013.6	7.5	7.8	6.8	45.4	5.4	55.9	20	
Sums or Means	1020.2						1015.2	6.6	6.9	5.8	1816.7		1753.1	304	

The readings of the Barometer are in millibars (1 mercury inch = 33.8632 millibars), and have been reduced to 32° F. at mean sea level and latitude 45° and corrected for index error at Greenwich. The extreme maxima and minima of barometric pressure are from the Dines Float Barograph, and have been standardised. The records of bright sunshine are from the Campbell-Stokes Sunshine Recorder. The results are published by permission of the Meteorological Office, Air Ministry, London.  $\pm$  30.126 mercury inches,  $\pm$  30.890 mercury inches,  $\pm$  29.193 mercury inches.

TABLE II.

METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.  
LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Table of Mean and Extreme TEMPERATURE OF THE AIR and of HYGROMETRIC CONDITION at Falmouth Observatory for 1921.

DATE.		TEMPERATURE OF AIR.										HYGROMETRIC CONDITION.										
		Mean of daily Maximum and Minimum.	Mean for 50 years 1871-1920.	Mean of daily Maxima.	Mean of daily Minima.	Mean daily range.	Absolute Maximum.	Date of Maximum.	Absolute Minimum.	Date of Minimum.	Dry Bulb.			Depression of Wet.			Humidity. Complete Saturation = 100.					
											I.	II.	III.	I.	II.	III.	I.	II.	III.	I.	II.	III.
1921.																						
January ..		47·6	49·4	51·7	43·5	8·2	55·0	28	34·8	15	47·1	50·1	48·4	°	1·0	2·0	1·5	92·6	88·5	89·5	80·5	90·0
February ..		41·2	43·4	48·9	39·4	9·5	54·8	23	31·1	10	42·4	47·6	45·0	1·5	3·2	2·2	88·2	78·1	83·7	83·3	84·2	
March ..		46·6	43·9	52·2	40·9	11·3	59·3	24	33·0	12	44·1	50·8	47·6	1·6	3·9	2·6	87·9	75·1	81·8	81·6	83·0	
April ..		48·5	47·5	55·5	41·4	14·1	66·0	20	33·6	16	44·7	53·2	50·7	2·0	6·1	4·8	84·9	64·7	70·0	73·2	75·6	
May ..		53·7	52·2	60·8	46·6	14·2	73·8	25	38·9	5	52·0	58·2	55·6	4·6	11·5	11·2	82·5	18·5	73·2	74·7	78·2	
June ..		60·4	57·1	67·6	53·1	14·5	77·0	17	45·0	1	58·5	64·4	63·6	3·7	6·6	6·0	78·4	65·5	68·7	70·9	74·6	
July ..		65·7	60·1	73·0	58·4	14·6	82·8	18	51·0	21	63·6	70·4	68·6	3·0	6·5	5·5	83·6	68·5	70·5	74·2	78·1	
August ..		60·5	60·1	66·4	54·5	11·9	80·2	19	47·0	11, 30	57·3	64·3	61·4	1·5	4·4	3·1	90·3	76·0	81·5	82·6	85·7	
September ..		59·9	57·0	65·8	54·1	11·7	71·0	6	42·1	16	56·8	64·3	60·6	1·1	4·5	3·3	91·2	75·1	83·3	83·2	85·1	
October ..		57·4	51·7	62·7	52·0	10·7	72·0	6	34·1	24	54·1	61·2	57·1	0·8	2·9	1·3	94·6	87·8	91·5	91·3	93·4	
November ..		50·1	47·3	53·6	46·5	7·1	62·1	2	29·2	12	48·1	52·1	50·2	1·8	3·0	2·2	86·3	80·2	88·6	85·0	85·7	
December ..		48·2	41·8	51·5	44·9	6·6	55·6	7	36·0	24	47·5	50·5	48·0	1·8	2·9	1·8	87·6	82·0	87·2	85·6	86·2	
Means... ..		53·6	50·7	59·1	47·9						49·7	57·3	54·7	2·0	4·8	3·8	87·3	75·7	80·8	81·3	83·3	

The data are from Thermometers divided on the stem and verified and placed in a Stevenson Screen at a height of 4 feet over grass. The corrections for diurnal range of humidity are obtained from the 24 hour records of the photographic thermograph for 25 years 1886-1910. The results are published by permission of the Meteorological Office, Air Ministry, London.

TABLE III.

## METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

RELATIVE PROPORTION OF DIRECTION OF WIND, Mean and Extreme VELOCITY OF WIND, and Monthly and Yearly RAINFALL for 1921.

DATE.	WIND.										RAIN.								
	Relative proportion of					Highest average hourly velocity.		Direction of Maximum velocity.	Day and hour of Maximum velocity.		Maximum gust.		Day, hour and minute of maximum gust.	Rain.	Mean for 50 years, 1871—1920.	Greatest amount in one day.	Date.	No of rain days.	Mean No. of rain days for 50 years, 1871—1920.
						Metres per second.	Miles per hour.		Metres per second.	Miles per hour.									
1921.	N	E	S	W		Metres per second.	Miles per hour.		d.	h.		Metres per second.	Miles per hour.	d.	h.	m.	mm.	mm.	
January ..	4	0	8	19		22·2	50	S W	10	11		30·2	68	10	18	10	106·2	119·6	1
February ..	10	10	6	2		20·0	45	E	5	5		25·5	57	5	5	28	13·6	98·6	3
March ..	6	0	9	16		24·6	55	S W	28	18		34·2	77	29	8	46	85·4	91·2	29
April ..	16	7	2	5		17·6	39	E S E	7	11		21·7	48	17	10	30	25·5	70·4	16
May ..	14	2	6	9		20·0	45	S W	30	18		26·7	60	30	18	10	60·1	56·4	25
June ..	14	8	2	6		18·5	41	E	28	8		23·1	52	28	8	30	* 2·8	60·7	25
July ..	9	6	8	8		18·7	42	S S E	23	15		29·0	65	29	3	55	54·5	75·4	28
August ..	8	1	5	17		18·6	42	S W	5	20		24·4	55	5	19	50	93·2	76·9	5
September..	7	12	6	5		21·5	48	E N E	17	5		26·4	59	17	12	10	19·4	84·8	11
October ..	9	7	9	6		19·7	44	S W	2	20		24·7	55	2	18	40	75·5	132·6	9
November..	7	9	8	6		22·2	50	—	14	2		27·3	61	14	1	30	+129·5	127·0	10
December..	10	2	4	15		24·0	54	W S W	23	4		31·0	* 69	35	3	30	68·2	154·9	16
Sums ..	114	64	73	114													\$733·9	11158·5	22
																			25
																			23
																			186
																			208

The velocity of the wind is from the Direct Pressure Tube Anemometer at Pendennis Castle and is the average for 30 minutes before to 30 minutes after the hour. The direction of the wind is from the Robinson Anemometer at Falmouth Observatory. The Rainfall, measured in millimetres (1 in. = 25·4 mm.) is from the 11 inch self-recording Beckley Gauge, 2 feet above ground; the number of Rain Days are those on which 0·25 mm. (0·01 in.) or more, of rain was recorded; the values given are from midnight to midnight. The results are published by permission of the Meteorological Office, Air Ministry, London. \* 0·11 in. † 5·1 in. ‡ 28·9 in. § 45·61 in. ¶ 1·08 in.



TABLE IV.  
METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE, 5° 5' W. Height, 167 feet above mean sea level.  
Monthly Totals of HOURLY VALUES of BRIGHT SUNSHINE at Falmouth Observatory during 1921.

1921.	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Totals.
January..	..	..	..	..	..	2·4	4·1	8·7	8·4	5·5	6·6	4·6	0·8	..	..	..	..	41·1
February ..	..	..	..	0·1	2·6	7·4	8·1	9·0	8·4	9·1	7·8	8·3	7·4	3·6	..	..	..	71·8
March ..	..	..	..	1·9	7·2	11·5	13·0	12·3	11·9	14·0	13·5	13·6	10·7	9·9	2·8	..	..	122·8
April ..	..	..	..	3·9	13·7	18·0	20·2	22·2	20·9	21·2	23·9	21·6	22·8	22·2	16·0	4·7	..	249·6
May ..	..	1·6	10·6	12·9	14·6	17·2	19·9	19·4	17·5	16·0	15·2	17·1	17·0	20·1	18·4	13·0	2·0	232·5
June ..	..	3·7	14·8	16·7	18·7	19·3	21·2	20·7	21·0	19·5	18·0	20·5	21·1	22·9	20·6	16·8	8·1	234·6
July ..	..	1·3	11·5	16·4	17·2	20·3	20·9	21·8	23·2	21·2	20·1	19·1	19·8	20·1	18·1	15·6	5·1	271·7
August..	..	..	4·2	12·1	11·8	13·8	14·1	13·4	12·3	13·4	14·4	13·4	12·8	11·4	8·2	3·8	0·1	159·2
September ..	..	..	..	6·4	13·1	16·8	16·9	17·7	15·3	17·0	18·0	17·6	17·7	13·9	4·5	..	..	174·9
October ..	..	..	..	..	5·0	9·7	13·0	15·5	14·8	14·0	13·7	10·4	9·2	5·1	0·3	..	..	110·7
November ..	..	..	..	..	0·1	3·9	7·8	7·2	7·7	6·8	8·0	6·6	4·7	0·3	..	..	..	53·1
December ..	..	..	..	..	..	0·7	5·8	8·3	9·3	8·3	7·7	4·2	1·1	..	..	..	..	45·4
Sums ..	..	6·6	44·4	80·2	108·3	142·3	165·0	176·2	170·7	166·0	168·9	157·0	145·1	129·5	88·9	53·9	16·3	1810·9

The records of Bright Sunshine are from the Campbell-Stokes Sunshine Recorder. The hourly values are the amounts recorded in the 60 minutes preceding each hour of Local Apparent Time. Until the end of 1920 the amounts were those registered during the 30 minutes before and the 30 minutes after each hour. The results are published by permission of the Meteorological Office, Air Ministry, London.



TABLE V.  
METEOROLOGICAL OFFICE WEATHER STATION, FALMOUTH OBSERVATORY.

LATITUDE 50° 9' N.; LONGITUDE 5° 5' W. Height, 167 feet above mean sea level.

Monthly totals of the HOURLY VALUES OF RAINFALL, from the continuous records of the Beckley Rain Gauge at Falmouth Observatory for 1921.

1921.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	mm.	ins.
January..	0.9	2.0	0.8	2.6	2.7	1.5	2.5	3.4	7.3	5.2	5.0	3.4	5.2	5.4	5.3	6.6	7.0	8.3	6.6	5.3	3.3	3.4	2.4	5.0	105.1	4.14
February	1.4	0.3	..	0.5	0.9	0.8	0.6	1.4	2.0	0.2	0.8	0.2	1.0	0.2	0.1	..	..	..	6.7	0.7	0.6	1.3	0.3	0.8	14.8	0.58
March	0.8	3.3	2.5	1.5	1.9	2.1	3.1	7.3	7.8	2.8	2.5	3.0	3.8	4.0	6.4	2.0	2.3	4.0	8.5	6.6	2.7	3.2	3.1	0.8	85.5	3.37
April	1.0	2.4	2.8	2.0	2.3	1.0	6.5	1.6	0.2	0.1	0.3	0.4	1.7	0.1	0.6	0.6	0.3	0.2	0.2	0.6	0.3	1.5	2.8	2.0	25.5	1.00
May	8.5	6.2	3.9	2.5	2.2	1.3	0.8	4.0	2.9	0.4	..	..	0.7	0.7	0.4	0.4	0.7	2.5	2.4	3.5	1.8	3.1	3.4	7.8	60.1	2.37
June	0.2	..	0.5	..	0.2	..	..	0.3	..	..	..	..	..	..	1.1	..	0.1	..	..	..	..	0.2	0.2	2.8	0.11	
July	5.4	2.7	1.0	0.4	1.6	0.4	3.4	0.5	1.7	6.1	3.1	1.5	1.2	2.6	6.2	1.8	0.5	0.3	0.2	0.8	1.7	1.2	3.7	6.3	54.2	2.13
August	3.5	2.1	1.2	2.1	0.6	2.0	3.4	1.3	0.4	3.2	2.1	0.8	1.2	3.0	5.3	17.9	2.5	4.3	6.9	11.4	7.7	5.3	3.5	0.8	92.5	3.64
September	0.5	1.6	0.6	0.9	0.4	0.5	0.6	0.6	0.7	0.5	..	..	0.9	0.6	2.4	1.8	2.7	1.8	1.2	0.1	0.6	6.6	0.9	0.1	20.6	0.81
October	0.3	0.6	0.6	0.2	2.9	0.9	..	..	..	..	5.8	9.5	1.5	3.2	0.4	0.2	3.3	5.3	33.7	4.7	0.4	1.3	0.3	0.4	75.5	2.97
November	5.9	8.0	7.6	6.6	8.9	3.3	5.1	2.9	5.9	6.0	1.6	1.1	2.7	2.5	6.1	12.1	6.7	1.7	3.8	3.6	8.6	7.4	5.2	6.2	129.5	5.10
December	4.1	2.2	1.3	1.4	1.6	1.2	1.6	1.6	5.3	10.5	2.0	3.0	1.2	1.3	1.0	1.3	2.4	4.7	2.3	1.3	2.4	4.9	4.3	5.3	68.2	2.68
Sums in mm.	52.4	31.4	22.8	20.7	26.2	15.0	21.6	24.5	34.2	39.0	23.2	22.9	20.6	23.6	35.2	44.7	28.4	33.2	66.5	38.6	30.1	133.2	30.1	45.7	784.3	28.91
Sums in ins.	1.28	1.24	0.90	0.81	1.03	0.58	0.85	0.98	1.35	1.54	0.91	0.90	0.81	0.93	1.39	1.76	1.12	1.31	2.62	1.52	1.19	1.36	1.19	1.41	..	..

The rain is measured in millimetres (1 in. = 25.4 mm.). The hourly values are the amounts recorded in the 60 minutes preceding each hour of G.M.T. Until the end of 1920 the hourly falls were the amounts registered during the 30 minutes before and the 30 minutes after each hour. The results are published by permission of the Meteorological Office, Air Ministry, London.

4/  
Royal Cornwall

# Polytechnic Society.

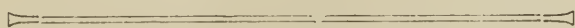


## *Mining & Engineering Exhibition.*



## Official Catalogue.

SEPTEMBER 14th to 18th, 1920.



PUBLIC ROOMS,  
Camborne, Cornwall.

# ROYAL CORNWALL POLYTECHNIC SOCIETY, EXHIBITION, CAMBORNE.

*September 14th to 18th inclusive.*

---

## ✂ Programme. ✂

- TUESDAY, SEPT. 14TH. 10 a.m., Exhibition open to Members.  
    "          "          12 a.m., Opening Address by the  
                                President, Henry Jenner,  
                                Esq., M.A., F.S.A.  
    "          "          8 p.m., Concert, arranged by Cecil  
                                Thomas, Esq.
- WEDNESDAY, .. 15TH. 3 p.m., A Paper will be read by  
                                F. J. Stephens, Esq., F.G.S.,  
                                Notes on the early History  
                                of Camborne.
- THURSDAY, .. 16TH. 3 p.m., Meeting of The Cornish  
                                Institute of Mining Engineers,  
                                when a Paper will be read  
                                by E. H. Davison, Esq., F.G.S.,  
                                on "The Veinstones of Corn-  
                                wall."
- "          "          16TH. 8 p.m., Concert, arranged by Cecil  
                                Thomas, Esq.
- FRIDAY, .. 17TH. 9 p.m., Drawing for prizes in the  
                                Art Union of Cornwall.
- SATURDAY, .. 18TH. Exhibition closes at 10 p.m.
- 

E. W. NEWTON, Secretary.

ROYAL CORNWALL POLYTECHNIC SOCIETY.

# 74th EXHIBITION, 1920.

PUBLIC ROOMS, CAMBORNE.

## LIST OF JUDGES.

### Mechanics :

SIR EDWARD NICHOLL, R.N.R., M.P., MESSRS. JOHN  
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TRESTRAIL, T. H. CADWELL, M. T. TAYLOR, C. C.  
T. MILLETT.

### Electrical Machinery :

RALPH B. ROGERS, L. A. HARDS.

### Surveying Plans :

R. A. THOMAS, JOSIAH PAULL.

### Essays and Papers :

H. JENNER, M.A., F.S.A., F. J. STEPHENS, F.G.S.,  
E. H. DAVISON, F.G.S., T. F. G. DEXTER.

### Fine Arts :

M. LINDNER, J. BARAGWANETH KING.

### Ornamental Arts :

R. MORTON NANCE, MISS WHITBURN,  
MRS. F. J. STEPHENS, MRS. J. CHELLEW.

### Art Needlework & Lace :

MRS. H. JENNER, LADY MARY TREFUSIS,  
MRS. JOHN HOLMAN, MISS E. BLIGHT.

### Photography :

J. H. COATH, F.R.P.S., W. UPTON, ALFRED OPIE.

### Natural History :

JAMES WICKETT, GEORGE PENROSE, F.L.S.,  
E. H. DAVISON, F.G.S., H. J. GRAY,  
W. L. FOX, F.R. Met. Soc.

### Lander Competition :

F. J. BOWLES, CANON JENNINGS, ARTHUR ROGERS, R.N.R.  
E. W. NEWTON, Secretary

# CATALOGUE

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## MAIN HALL.

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Rapid (Thompson Davis Patent) Electro-Magnetic Separator, type O, for treating feebly Magnetic Ores. The only British separator on the market for this purpose. Will give fewer adjustments than any other make, and can be adjusted whilst running.

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Oil Cookery Stove with Oven, Grill, and Toaster complete.

Cleanliness, freedom from smoke and smell. Economy.

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#### 1. CONCRETE PARTITION SLAB MACHINE.

This machine is constructed to produce grooved and tongued, cored or solid slabs 18" x 12" and of varying thicknesses, suitable for internal or external walling.

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By means of an attachment fitted to the slab machines, pipes 2" or 3" in diameter can be made, and by our system of manufacturing 3 or 5 pipes at each operation rapid production is obtained.

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For the manufacture of bricks of standard British or Continental dimensions, plain or coloured and specials of any required shape.

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For the manufacture of Concrete Tiles of any colour, light in weight and perfectly wind and water proof.

These tiles form the cheapest form of permanent roofing now on the market.

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This machine produces blocks, hollow or solid on the face down system, which is admitted to be far superior to any other method of manufacture. A range of 2,000 different sizes and shapes can be produced with this machine, and by our special face plates it is possible to obtain the same effect as that produced by natural dressed stone.

#### 6. VICKERS SPORTING RIFLES.

.22 Bore Miniature Target Rifles Martin pattern, one piece walnut stock and fore-end, detachable heavy barrel and action fitted with screw adjustable open V Sight, and improved barleycorn foresight. Can be fitted with Vickers Aperture Backsight with Windgauge and Tubular Foresight, Ring and Blade or Ring and Bead Combinations.

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.12 bore Chopper Lump Shot Tubes also Ordinary Pattern Tubes without Chopper Lump.

Vickers Anti-Corrodite Rifle Preservative Composition. Premier Preservative against rust and erosion.

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A display of up-to-date Surveying and Astronomical and other Optical and Scientific Instruments.

8. POST-WAR MODEL IMPROVED COOKE THEODOLITE.

9. SURVEYOR'S LEVELS (Cooke Type).

10. SURVEYOR'S LEVELS (Zeiss pattern).

11. SMALL TOOLS.

A selection of Small Tools including the Vickers Adjustable Reamer, Vickers Vanadium and High Speed Twist Drills, Milling Cutters, etc.

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"Mountain" Theodolite, Dumpy Level, Miner's Dial, 4in. Pocket Dial Vernier Prismatic Compass, 3½in. Prismatic Compass, Pocket Reflecting Level, 5in. Abney Level, Farm Level and Selection of Small Surveying Instruments.

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Builders' Dumpy Level.

10 inch Engineers Dumpy Level.

12 inch ditto ditto

14 inch ditto ditto

14 inch New Engineer's Dumpy Level.

5 inch New Model Transit Theodolite.

5 inch Quick Setting Transit Theodolite.

5 inch Patent Engineer's Transit Theodolite.

6 inch ditto ditto

5 inch ditto ditto

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3 inch Imperial Reciprocating Drill, complete with Air Hose and Dust Allayer, mounted on bar.

$2\frac{3}{4}$  inch Water Hammer Drill on Cradle with Water Hose, mounted on bar.

$2\frac{1}{16}$  inch Hydromax Air Feed Stopping and Driving Drill, weight 86 lbs.

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Pneumatic Chipping Hammer.

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Also selection of Spare Parts for the above.

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## SHIP MODELS.

(Shown with a view to the possibility of the making of similar Ships as a Cornish Industry).

### R. Mortan Nance,

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1. "THE MAYFLOWER," 1620. Built by R. Patterson, Lasswade, Midlothian.

2. "FLEMISH CARRACK C." 1450. Based on a remarkably detailed print of that date by the master "W.A." This is the only authentic model of a ship of the period in existence. It illustrates the origin of most features of the more modern sailing ships—decks, rig, armaments, etc.

3. ELIZABETHIAN WARSHIP, 1600. Based on contemporary prints. Showing the build and rig at the time of the Spanish Armada.

4. DUTCH MAN-OF-WAR C. 1670. Based on contemporary prints, pictures and models.

5. AN ENGLISH HOY, 1700-1720. Based on a contemporary plan by Wm. Sutherland. Showing the strength of Dutch influence on early fore-and-aft rig.

6. TOPSAIL SCHOONER, 1840. Toy model. Made to sail, with lead keel and simplified rigging.

7. ST. IVES PILCHARD BOAT. Toy model. Made to sail, with lead keel.

## MECHANICS.

- |   |  |       |                  |
|---|--|-------|------------------|
| 1 | Odourless Saucepan...                      | ..    | Bedford Pedlar   |
| 2 | Tin Concentrating Frame                    | ...   | Joseph Coad      |
| 3 | Violin and Case                            | ...   | James Richards   |
| 4 | Pair of Candlesticks, bent iron work       |       | Charles Penaluna |
| 5 | Fire Screen                                | ditto | ditto            |
| 6 | Model Battle Cruiser H.M.S. Princess Royal |       | F. W. Hunt       |
| 7 | Model of a Ships' Lifeboat (patent)        |       | Edward Haly      |
| 8 | Oil Painting "The Watt Room,"              |       | Heathfield Hall, |
|   | Birmingham                                 | ...   | G. Penrose       |

It was in this room that James Watt worked at his inventions, and the contents have not been disturbed since his death in 1819.

- |    |  |     |                                  |
|----|--|-----|----------------------------------|
| 9  | Glass Models of Mine Workings, Plan, Cross Sections    |     | East Pool and Agar Ltd.          |
| 10 | Model Section...                                       | ... | Taylor's Concentrating Frame.    |
| 11 | Model  |     | Berryman's Automatic Tin Sampler |
| 12 | Model  | ... | Tolvaddon Pulp Skimmer           |
| 13 | Model Section of Roof                                  |     |                                  |
| 14 | Cross Sections of South Crofty and Tincroft Mines      |     |                                  |
| 15 | Four Glass Contour Models of Granite Areas of Cornwall |     | Tehidy Minerals Ltd.             |
| 16 | Terrace of East Pool and surrounding mines.            |     |                                  |

**SPECIAL CLASSES for which Prizes are offered by  
Commander Sir Edward Nicholl, R.N.R., M.P.**

**SECTION A. CLASS II.**

Model Engine and Boiler	...	E. K. Andrew
Pit Head Gear, Rotating Stamps, Self-dumping Skip,		
Horizontal Engine	...	Roskear Boys' School

**SECTION B. CLASS I.**

Drawing of Rock Drill on Tripod	...	C. Pengelly
Fast Headstock for 8 inch Lathe, Engine Cranks, Steam		
Whistle, Kingston Valve, Friction Clutch for Mill		
Gearing	...	Roskear Boys' School.

**SECTION C. CLASS I.**

Surveying Plan of King Edward Mine		F. A. Mills	
Ditto	Wheal Grenville	ditto	
Plan of Rosario Tin Mine	...	Frank Trythall	
Ditto	King Edward Mine	...	T. Lamb
Ditto	ditto	...	J. C. Anderson
Ditto	ditto	...	J. C. Richards
Ditto	ditto	...	E. W. Wright
Ditto	ditto	...	G. A. Whitworth
Ditto	ditto	...	A. B. Rowe
Ditto	ditto	...	W. Graham
Ditto	ditto	...	C. W. Walker
Ditto	ditto	...	R. F. Connock
Ditto	ditto	...	H. H. Martin
Ditto	ditto	...	H. C. G. Newton, M.C.

**FINE ART SECTION (under 16 years of age.)**

Pair of Hawks, Falcon, Kingfisher, Woodpecker, Iridescent		
Shell		Roskear Boys' School

**MISCELLANEOUS.**

Chart showing fluctuations in Tin Prices,		
July, 1919—July, 1920		Roskear Boys' School
Rainfall Chart, March—August, 1920	do	do
Temperature Chart, March—August, 1920	do	do

## ORNAMENTAL ART.

1	Necklace and Pendant, handmade by myself,	Miss E. Tewsley	2	2	0
2	Bent Iron Work,	C. Pennaluna			
3	Pair Candlesticks	do.			
4	Fire Screen	do.			
5	Fire Screen in Mahogany	J. Dunstan			
6	Set of carved Mahogany Frames	do.			
7	Plaster Paris Model of Shod Horse Hoof	A. P. C. Dunstan			
8	Natural Horse Hoof shod with Copper, in form of Inkstand	do.			
9	2 Cases Military Badges	C. N. Gill			
10	The Lord's Prayer, Panel	L. Carveth			
11	Pentagonal embossed leather Waste-paper Basket	E. F. Brown			

## ART NEEDLEWORK.

1	Limerick Lace Scarf, Miss Edith Carter				
2	Embroidered Nightdress,	E. O. Boase			
3	Silk Jumper,	R. E. Newton	3	3	0
4	Crochet Tablecloth, Maltese pattern,	M. Newton			
5	do do Rose do do				
6	Cosy Cover,	M. Mabbott			
7	Oval Table Centre	do			
8	Handkerchief of Bishop's lawn	do			
9	do edged with braid	do			
10	Crochet Quilt,	E. Thomas			
11	2 Cushion covers,	Pte. S. Smith			
12	Limerick lace handkerchief,	R. Davenport	2	10	0
13	Needlework picture, Man's Head Rock	do.	5	5	0
14	do. The Gowna Rock	do.	2	10	0
15	do. The Lions Rock	do.			
16	Needlework panel for screen	do.			
17	8 articles, done whilst in Hospital	W. Hampton			
18	Afternoon Tea Cloth	E. C. Murdoch			
19	Irish Crochet Hat	do.			
20	Pair Irish Crochet D'Oyleys	do.			
21	Net Collar with Irish Crochet	do.			
22	Pink Satin Ribbon Rose	do.			
23	Tea Cosy	M. Carthew, aged 10			
24	Nightdress case	do.			
25	Cushion cover	do.			
26	Crochet Ivy-leaf Cosy	B. Pool			
27	Crochet Mat	do.			



28	Table cloth, Marguerite pattern	Mrs. A. Clarke
29	do. Pansy	do.
30	do. Arum Lilly	do.
31	do. Holly berry	do.
32	do. Lynton	do.
33	do. Fancy	do.
34	do. Wild Rose	do.
35	do. do.	do.
36	3 Cushion Covers	E. Hendy
37	Needlework Picture, "Scotie."	M. S. Freeman

### \*PHOTOGRAPHY.

			£	s.	d.
1	Nude with Bali	Lionel Wood, F.R.P.S.	3	3	0
2	The Shadow of the Cross	do.	3	3	0
3	Despair	...	3	3	0
4	His Worship the Mayor of Penzance,	Opie, Ltd., Cornwall, not for competition			
5	Portrait	...	do.	do.	
6	The Lizard	...	do.	do.	
7	Enlarged Photo	Opie & Sons, Penzance			
8	Sunshine and Shade	Baldwin H. Jenkin			
9	Flower Study	do.			
10	Fruit	...	do.		
11	Roche Abbey	...	do.		
12	Cantley Rock	...	do.		
13	Back from Market	Dr. C. Beauchamp-Hall			
14	The Lock	...	do.		
15	Winter	...	do.		
16	Wot fer do e luv Oi	Fred Walker	1	1	0
17	Unto thee, O Lord	do.	1	1	0
18	Peace	...	1	11	6
19	An Enchanted Glen	Frederic G. Tutton	1	1	0
20	Sunshine and Shadow	do.	1	1	0
21	A Sylvan Scene	do.	1	1	0
22	Thoughts of By-gone days	Frank Brown	25	0	0
23	Autumn in a Beech Glade, Tulips,	Robert M. Fanstone	set 1	1	0
24	Sisterly Council, Sweet Peas, Thunder, Woodland Path,	Robert M. Fanstone	each 10	6	
25	Autumn on the River	do.	1	1	0
26	The Omen	E. Smithells	2	2	0
27	Reflections	do.	2	2	0
28	The Mirror of the Sea	do.	2	2	0
29	The Unfamiliar Tune	do.	2	2	0

30	Harbour Gossip	do	2	2	0
31	Herring Season, St. Ives	do.	2	2	0
32	Fishing Boats, do.	do.	2	2	0
33	Colour Photography 6 Half plate Autochromes	L. J. Steele	Not for Sale		
34	8 Quarter plate Dufay Diopichrome Process	L. J. Steele	do.		
35	10 Half Plate Lumiere Autochrome, Natural Colours	S. J. Ford			
36	3 Lantern plates, Autochrome	do.			
37	5 Lantern plates, Monochrome	do.			

### PROFESSIONAL FINE ART.

1	Study of a Girl's Head, Mrs. E. Bunt				
2	Flowering Shrubs	do.	4	0	0
3	Original Portrait, Miss J. F. Hancock				
4	do.	do.			
5	do.	do.			
6	do.	do.			
7	do.	do.			
8	Wheat Grenville Mine, R. B. Smart R.B.A.		50	0	0
9	After the Storm, Perranporth, Miss Kennaway		5	5	0
10	Woodbury Common, Nr. Exeter, Miss Rogers		5	5	0
11	The Estuary of the river Exe, do.		4	4	0
12	Drawing the Maush, Miss W. H. Roberts		8	8	0
13	Simple Life	do	2	2	0
14	Back to Village Life, Mr. W. Prater		8	8	0
15	The Smithy	do.	7	7	0
16	West Country Crabbers	do.	8	8	0
17	Calling the Cattle Home	do.	8	8	0
18	The old Home	do	7	7	0
19	The Gannel Valley	do.	6	6	0
20	Crantock Village	do.	6	6	0
20a	Departing Day, Mr. W. Cox		30	0	0
20b	October Moonrise, St. Ives Bay	do.	10		
20c	The Steeple Rock, Kynance, Mr. G. Cox		12	12	0
20d	A bit of old Camborne	do.	4	0	0
20e	Study of Rocks, Kynance	do.	3	0	0
21	St. Croix, Josselin, Miss E. G. Swiney		3	3	0
22	A Breton Street	do.	4	4	0
23	A Country Lane		5	5	0
24	Autumn Tints at Pembury, Kent, Mrs. R. J. Fox		5	5	0
25	Kynance from Lizard	do.	8	8	0
26	Early morning on the Lac de Jong Jura,	do. not for sale.			
27	Homeward Bound, Miss F. Massey		4	4	0
28	Swanpool, Falmouth	do.	3	3	0

29	Evening	Miss E. Massey	2	10	0
30	Cornish Fishermen	do.	5	5	0
31	Winter,	Miss E. Alexander	10	10	0
32	Spring,	do.	10	10	0
33	A Cornish Garden,	Miss H. Knapping	2	2	0
34	The Cloud	do.	2	10	0
35	Packing Herrings, St. Ives,	Miss M. Grylls	8	8	0
36	Kemps Shop, St. Ives	do.	3	3	0
37	Sisters,	Miss M. A. Cohen	8	8	0
38	Harbour, St. Ives	do.	8	8	0
39	The Smeaton Pier, St. Ives	do.	2	2	0
40	Lloyd George,	Mr. J. S. Yabsley	5	15	0
41	A Cloudy Day in the Harbour, St. Ives	do.	8	8	0
42	The Outgoing Tide, Porthmeor Beach,	do.	3	3	0
43	The Incoming Tide, Porthmeor Beach,	do.	3	3	0
44	Westcotts Quays,	do.	2	10	0
45	The old horn Lantern	do.	3	15	0
46	Clodgy, in St. Ives	do.	1	15	0
47	Full Moon in the Harbour	do.	1	5	0
48	A Ground Sea	do.	1	5	0
49	The approach of Night, St. Ives,	A. C. Bailey	25	0	0
50	Nocturne, St. Ives	do.	8	0	0
51	St. Ives Harbour, Cornwall	do.	5	0	0
52	Away to the West	W. B. Fortescue	15	15	0
53	Intruders,	do.	25	0	0
54	A Fisherman's Courtyard	do.	31	10	0
55	Across the Downs	do.	10	0	0
56	Morning,	A. Hartley	25	0	0
57	Old Bailey's Lane, St. Ives,	Mr. A. White	12	12	0
58	A Glimpse of the Harbour	do.	3	13	6
59	A Bit of the old Town	do.	3	13	6
60	Corn Field Newquay,	Miss J. E. West	4	0	0
61	Spring,	Miss E. J. Barlow	10	10	0
62	Harvest Time	do.	16	16	0
63	Cooling Shades of the Forest	do.	36	15	0
64	Looking back to Fishstrand,	Mr. S. J. Beer	3	0	0
65	A Sketch of Falmouth Harbour	do.	1	0	0
66	Mouth of Falmouth Harbour	do.	1	0	0
67	Fishstrand, Falmouth	do.	15	0	0
68	The Bar Pool, Falmouth	do.	10	0	0
69	Carnival,	Mr. F. Hodgkins	15	15	0
70	Washing Place	do.	15	15	0
71	Ludlow Castle,	do.	10	10	0
72	Old St. Ives	do.	6	6	0
73	The Cliffs, Zennor, Cornwall,	Miss L. Bodilly	5	5	0
74	Churchtown, Zennor	do.	5	5	0
75	Cornfield, Zennor	do.	5	5	0

76	The Field Path	do.	2	2	0
77	The Sentinels	do.	2	2	0
78	Cornish Cottage	Miss L. Bodilly	3	3	0
79	A Derbyshire Hill	do.	5	5	0
80	Evening on the Moor, Mr. J. G. Sykes		10	0	0
81	Sea Pinks, S. Agnes,	Miss R. Barclay	3	3	0
82	Feathery Columbine	do.	5	5	0
83	Sea Pinks, evening	do.	3	3	0
84	June Roses	do.	6	6	0
85	Laburnum and the old Barn	do.	10	10	0
86	Orchard Glories	do.	4	4	0
87	Covent Square, Caudebec	E. Roskrige	5	12	6
88	Snow in November	do.	4	4	0
89	The Market, Caudebec	do.	2	12	6
90	The Coast by Newquay, M. S. Rowse		1	1	0
91	A Garden Border	do.	1	1	0
92	Boats at Anchor on the Maas, Holland,				
		M. Lindner	26	3	0
93	San Giorgio Maggiore, Venice. Evening Glow				
		M. Lindner	12	12	0
94	Timber Hauling, Miss M. A. Kingwell		5	5	0
95	Dartmoor Ponies	do. do.	5	5	0
96	The Lights of London	C. H. Rowbotham	3	13	6
97	Victime de la Guerre	do.	1	11	6
98	Becalmed	do.	1	11	6
99	The Homestead	do.	1	1	0
100	Noah's Ark	do.		10	6
101	Falmouth Quay Punt	do.		10	6
102	Etching, Bridgewater Flats, F. Skinner		3	3	0
103	A Somerset Lane	do.	3	3	0
103a	Dreamland, carved head of baby in wood				
		K. G. Hammond	25	0	0
103b	Little Drops of Water	do. do.	8	8	0
103c	Stormy Sunset at St. Gennys	do. do.	3	3	0
103d	A Dull Day on the North Coast	do.	2	2	0
103e	Seascape	Miss E. Tewsley	3	3	0
103f	Carthew, St. Ives	do.	3	3	0

### FINE ART (AMATEURS).

104	Study of Fruit, peaches, Mrs. G. A. Bryant	not for sale
105	do oranges	do
106	Study of Flowers, poppies	do
107	Study in Still Life	K. M. Hichens not for sale
108	A Golden Day in the Valley of the Mawddach	
		A. C. Wade

109	Morning Sunshine	(6)
110	A Quiet Afternoon in Sutton Harbour	do
111	A Spring Morning, Barbican	do
112	Mounts Bay, from above Gulval, R. H. Penpraze	
113	Carn Brea Hill, from South Downs	do
114	Evening, North County	do
115	Pendulver Point, from Housel beach	do
116	Gunwalloe Church	do
117	Still Life	do
118	Portrait of Lady	do
119	China Painting	A. Feby
120	Tea and Coffee Pot	do
121	Four Plates	do
122		J. E. C. Poolds
123	Still Life in oil, violin study,	P. Eley
124	In The Mooski Cairo,	A. Opie
125	Two Water Colours,	P. Gregor

### NATURAL HISTORY.

1	Collection of Sketches British Orchids. &c., 9 frames	H. Carlyon
2	Collection of Objects illustrating the antiquity of Mining in Cornwall ...	The Royal Institution of Cornwall
3	Collection of Cornish Veinstones	E. H. Davison, F.G.S.
4	Collection of Minerals, illustrating the Minerals of Corn- wall	Camborne Mining School per H. R. Beringer
5	Collection of Minerals	... Christopher Bennett
6	Collection of Cassiterite Lodestones	Lady Gwendoline Mine
7	Collection of Mineral Ores	... Dolcoath Mine Ltd.
8	Collection of Mineral Ores	... South Crofty Ltd.
9	Collection of Mineral Ores	... East Pool & Agar Ltd.
10	Collection of Alluvial Tin from Perak, Selangor and Siam	... F. Brown
11	Collection of Rare Cornish Minerals	... E. W. Newton
12	Collection of Crystal Models illustrating famous gems and minerals that are cut for gems	E. W. Newton
13	Geological Map of Cornwall.	
14	China Stone, Hendra Quarry	... Parkyn and Peters
15	China Clay, Burngullow Works	ditto

# SCHOOL OF ART AND TECHNICAL CLASSES.

## Under the Cornwall County Council.

### *Camborne School of Art.*

1	Studies of Iris in Water Colour	Miss M. V. Treloar
2	Studies of Iris in Water Colour	ditto.
3	Studies of Lily in Water Colour	Miss M. V. Treloar
4	Studies of Campion in Water Colour	ditto.
5	Embroidered Tea Cosy	ditto.
6	Design for Emb. Linen Table Cloth	ditto.
7	Head from the Antique ...	Miss E. Stephens
8	Head from the Antique ..	... ditto.
9	Embroidered Tea Cosy ...	... ditto.
10	Studies of Foxglove ...	... ditto.
11	Flower Studies ...	... ditto.
12	Stencilled Curtains ...	... ditto.
13	Design for Church ...	E. Tregoning
14	East and West Elevations ...	... ditto.
15	Transverse Section ...	... ditto.
16	Longitudinal Section ...	... ditto.
17	Vestry Screen, sections and plan ...	... ditto.
18	Perspective View ...	...
19	Studies of Iris in Water Colour	D. A. Newnham
20	Studies of Iris in Water Colour ...	Miss J. Pryor
21	Embroidered Linen Case ..	... ditto.
22	Plant Studies in Water Colour	Miss E. Reynolds
23	Carved Oak Fire Screen ...	G. Eustice
24	Models in light and shade	Miss V. E. Parnacott
25	Models in light and shade	ditto.
26	Models in light and shade	ditto.
27	Design for Frieze ...	C. N. Roberts
28	Architectural Drawing ...	... ditto.
29	Group of Vegetables in Oils ..	... ditto.
30	Group of Vegetables in Oils ...	... ditto.
31	Embroidered Tea Cosy ...	Miss I. G. Eustice
32	Embroidered Linen Case ..	... ditto.
33	Embroidered Linen Case ...	... ditto.
34	Embroidered Cushion Cover ...	... ditto.
35	Lace Collar ...	Miss E. Eustice
36	Embroidered Table Cloth ...	... ditto.
37	Leather Pocket Case ...	Miss F. M. Eustice
38	Leather Book Cover ...	... ditto.



39	Group of Flowers in Water Colour	ditto.
41	ditto. ditto.	ditto.
42	Group of Flowers in Water Colour	Miss F. M. Eustice
43	Embroidered Sofa Back ...	Miss W. Eustice
44	Embroidered Tea Cosy ...	ditto.
45	Stencilled Sofa Back ...	ditto.
46	Stencilled Satin Case ...	ditto.
47	Stencilled Satin Case ...	ditto.
48	Embroidered Table Centre ...	Miss A. Jago
49	Embroidered Table Cloth ...	ditto.
50	Embroidered Linen Case ...	Miss D. Hendy
51	Stencilled Satin Case ...	ditto.

*Penzance School of Art.*

52	Still life (oil) ...	Miss M. Bennetts
53	Still life (oil) ...	ditto.
54	Figure from life ...	ditto.
55	Still life (oil) ...	Miss G. Stewart
56	Still life (oil) ...	ditto.
57	Flowers (oil) ...	ditto.
58	Figure from life (oil) ...	ditto.
59	Landscape ...	ditto.
60	Landscape, etching ...	Miss E. L. Vigeon
61	Figure from life, etching ...	ditto.
62	Figure from life, etching ...	ditto.
(Metal plate of one of the above)		
63	Landscape, Newlyn Cottages, etching	ditto.
64	Two Figures from life, etchings	Miss P. Stephens
65	Animal from life, etchings ...	ditto.
66	Animals from life, etching ...	ditto.
(Metal plate of the above)		
67	Figure from life, oil ...	Miss C. L. Vigeon
68	Landscape, oil ..	ditto.
69	Still life, water colour ...	ditto.
70	Still life, water colour ...	ditto.
71	Flowers, oil ...	ditto.
72	Still life, water colour	Miss W. Carne
73	Still life, oil ...	Miss L. Allen
74	Still life, water colour ...	Miss M. Trezise
75	Head from life, oil ...	Miss E. L. Vigeon
76	Figure from life oil, lamp light	ditto.

*Truro School of Art.*

77	Modelled head from the antique	Miss M. Bromley
78	Modelled head from the antique	ditto.
79	Modelled figure from life ...	ditto.

80	Modelled head from life	...	Miss M. Bromiey
81	Modelled head from life	...	ditto.
82	Modelled head from life	...	ditto.
83	Modelled head from life	...	ditto.
84	Figure from life	...	ditto.
85	Figure from life	...	ditto.
86	Figure from life	...	ditto.
87	Head from life	...	ditto.
88	Head from life	...	ditto.
89	Illuminated poem	...	Miss D. Bristow
90	Figure from life	...	ditto.
91	Anatomical figure from antique	...	ditto.
92	Anatomical figure from antique	...	ditto.
93	Painted Flowers without back ground	...	Miss G. Hinton
94	Painted Flowers without back ground	...	ditto.
95	Natural objects in pastel	...	Miss G. Hinton
96	Common objects in pastel	...	ditto.
97	Painted Flowers without back ground	...	Miss A. Linnett
98	Common objects in light and shade, in pastel	...	ditto.
99	Common objects in light and shade, in pastel	...	ditto.
100	Natural objects in pastel	...	ditto.
101	Common objects in pastel	...	ditto.
102	Still life in water colour	...	Miss T. Pascoe
103	Painted birds from preserved specimens	...	ditto.
104	Natural objects in water colour	...	ditto.
104a	Plants from nature	...	S. Lawry
104b	Natural objects in water colour	...	ditto.
105	Group of Models in light and shade	...	Miss F. F. Andrew
106	Natural objects in water colour	...	ditto.
107	Natural objects in water colour	...	ditto.
108	Drawing of horse from plaster cast	...	H. J. Butler
109	Still life in oils	...	Miss P. Head
110	Study of Wail Flowers	...	ditto.
111	Figure from life, tone study	...	S. Granville
112	Figure from life, tone study	...	ditto.
113	Design for Book illustration	...	ditto.
114	Design for Book illustration	...	ditto.
115	Design for Book illustration	...	S. Granville
116	Embroidered Cushion Cover	...	s H. Strongman
117	Embroidered Panel, Fire Screen	...	ditto.
118	Embroidered Panel, Fire Screen	...	ditto.
119	Embroidered Chair Back	...	ditto.
120	Embroidered Cosy Cover	...	ditto.
121	Embroidered Cosy Cover	...	Miss H. Sherman
122	Embroidered Handkerchief Sachet	...	ditto.
123	Embroidered Cushion Cover	...	ditto.
124	Embroidered Chair Back	...	ditto.

125	Embroidered Chair Back	...	Miss H. Sherman
126	Embroidered Cushion Cover	...	Miss A. L. Guy
127	ditto Cosy Cover	...	ditto
128	ditto Handkerchief Sachet	...	ditto
129	ditto Chair Back	...	Miss M. L. Christien
130	ditto Cushion Cover	...	ditto
131	ditto Hand Bag	...	ditto
132	ditto ditto	...	ditto
133	ditto Panels for Fire Screen	...	ditto
134	Figure from Life (Tone Study)		
135	Head from Life, Pastel		
136	ditto ditto		
137	ditto Charcoal		
138	ditto ditto		
139	Geometrical Drawing		The Students of
140	Natural Objects in Pastel		Truro School of
141	ditto ditto		Art.
142	Architectural Ornament		
143	ditto ditto		
144	ditto ditto		
145	ditto ditto		
146	Architectural Orders		
147	Common Objects in Paste		
148	ditto ditto		
149	ditto ditto		The Students of
150	ditto ditto		Truro School of
151	ditto ditto		Art.
152	ditto ditto		
153	ditto ditto		

*Falmouth School of Art.*

154	Tone Study Still Life	...	E. Fenton
155	Still Life ...	...	Miss M. Cox
156	Drawing of Head from Cast	...	Miss B. Henry
157	Head from Cast, water colour	...	Miss D. Banks
158	Head from Life	...	Miss E. F. Strangeways
159	Antique Figure	...	ditto ditto
160	Landscape Studies	...	Miss M. Carter
161	Pen and Ink Drawings	...	Miss C. H. Johansen
162	Head from Life	...	Miss S. Tresidder
163	Design for Candles shade	...	Miss O. Eustice

*Falmouth Technical School.*

164	Drawing of a Triple Expansion Engine	C. B. Perriam
165	Drawing of Centrifugal Pump in Frame	J. G. Willcock
165a	Tracing of Centrifugal Pump on Cardboard	
165b	Blue Print on Cardboard	...

- 166 Tracing of Locomotive in Frame L. M. Pascoe

*Helston School of Art.*

- 167 Jumper, Stencilled design on White Voile Miss P. Ansell  
 168 Cushion Cover, Stencilled .. Miss D. Tripp  
 169 Rhododendrons, drawn and tested from  
     nature ... .. Miss P. Cowls  
 169a Sheet of Quick Figure Studies, life ..  
 169b Design for Poster ... ..  
 170 Anemones, water colour study Miss L. Cowls  
 171 Studies (10 mins) from life Miss D. M. Eddy  
 171a Flower Studies ... ..  
 172 Table Centre, stencilled and outlined in silk Miss O. Head  
 173 2 Heads and Features from Antique W. Oates  
 174 Animals Heads from Cast ... Miss D. Hendy  
 175 Small linen bag worked in silk ... Miss M. White  
 176 Square drawn thread Tea Cloth Miss L. Hoskin  
 177 Set of Designs for Cut Linen Nightdress,  
     Petticoat, Camiso ... Miss E. Lugg  
 178 Quick Life Studies .. ditto  
 179 Sheet of Life Studies (Memory) Miss J. Pollard  
 180 Stencilled Cushion ... Miss A. Hoskin  
 181 Square Table Cloth Stencilled Miss I. Virgin

*Liskeard School of Art.*

- 182 Study of Flowers, water colours Miss D. Symons  
 183 Study of Flowers, water colours Miss A. B. Wynter  
 184 Study of Flowers, water colours ditto  
 185 Oil Colours Study ... Miss Z. Chalice  
 186 Sampler, Original Design for Miss G. Morcon

*Launceston School of Art.*

- 187 Cushion Cover, Stencilled ... L. W. Scobie  
 188 Cushion Cover, Stencilled ... M. Cook  
 189 Design for Printed Muslin ... G. Pethybridge  
 190 Still Life in Water Colour ... ditto  
 191 Plants from Nature ... .. ditto  
 192 Still Life in Water Colours ... Miss G. Parsonson  
 193 Shaded Drawing from Cast ... W. Cottle  
 194 Still Life in Water Colour ... Miss D. Dingley  
 195 Plant Studies ... .. Miss M. S. Dew  
 196 Design for Title Page in Black and  
     White ... .. W. G. Parsonson  
 197 Still Life Paintings in Water Colours Miss M. E. Frayn

*Redruth School of Art.*

198	Drawing, Head from Life	..	C. D. Boyle
199	Drawing, Figure from Life	...	ditto
200	Perspective Drawing	...	ditto
201	ditto ditto	...	ditto
202	Drawing from Antique	...	ditto
203	Drawing of Antique Figure	..	ditto
204	Design for Stained Glass Window	..	ditto
205	Measured Drawing, Bolton Priory	..	J. A. Pryor
206	Measured Drawing, One Bay of Sacristium N. side Westminster Abbey	..	ditto
207	Design for Morning Room	...	ditto
208	ditto ditto	...	ditto
209	ditto ditto	...	ditto
210	ditto ditto	...	ditto
211	Perspective ditto	...	ditto
212	Still Life in Oils	... ..	B. M. Stoneman
213	ditto	... ..	ditto
214	ditto	... ..	ditto
215	ditto	... ..	ditto
216	ditto	... ..	ditto
217	ditto	... ..	ditto
218	Four-fold Screen, Stencilled Peacocks	..	ditto
219	Carved Wood Mirror Frame	...	ditto
220	Carved Wood Frame	... ..	ditto
221	Design for English Abbey Church	..	P. C. Teague
222	Perspective for English Abbey Church	..	ditto
223	Orders of Architecture	...	ditto
224	Design for Morning Room	...	ditto
225	ditto ditto	...	ditto
226	Perspective ditto	...	ditto
227	Measured Drawing of English Parish Church	..	ditto
228	Design for Wall of Room	... ..	R. G. Fredinnick
229	Studies of Lettering and Script Writing	..	ditto
230	Design for Printed Cretonné	..	ditto
231	ditto ditto	...	ditto
232	Design for Poster	... ..	ditto
233	Studies of Plant Fern	... ..	C. Carhart

*St. Austell School of Art.*

234	Head of an Old Man from Antique	..	W. G. Truscott
235	Drawing of part of a Frieze	...	ditto
236	2 Wine Glasses and Finger Bowl	..	ditto

## HANDICRAFT EXHIBITS.

### *Roskear Girls School.*

- 237 Cardboard Boxes
- 238 Raffia Work Baskets
- 239 Raffia and Canvas Hand Bags

### *Trewirgie Handicraft Centre.*

- 240 Wardrobe with Curtains
- 241 Theodolite
- 242 Framed Fire Screen
- 243 Boot Brush and Polish Tidy
- 244 Scooter
- 245 Model Bat

### *Roskear Infants School.*

- 246 An August Seaside Scene

### *Camborne National Infants.*

- 247 Hand-made Canvas Bags
- 248 Raffia Bags
- 249 Illustrations of Nursery Rhymes in Plasticene
- 250 Groups of Flowers and Fruit

### *Basset Road Infants, Camborne.*

- 251 Nature Illustrations
- 252 Dolls Garments, &c.
- 253 Nature Expression. Story Expression

### *Lanner Girls School.*

- 254 Garments, etc., Fancy Articles
- 255 Children's Garments, Dolls Clothes

### *Roskear Boys' School.*

- 256 From Model in Pastel
- 257 Writing Cases, Ink Stands, Card Cases, Calendars
- 258 Models of Mining Machinery and Implements

### *Blackwater School.*

- 259 Crayon Drawing (Flowers)
- 260 Patches and Button Holes
- 261 Cardboard (a) Punts, (b) Farmhouse Settles
- 262 Plasticine, (a) Egg—Cups and Eggs, (b) Jugs

### *Beacon Infants School.*

- 263 Handkerchiefs, Purses, Canvas Mats
- 264 Dolls Muffs, Dolls Bonnets, Kettle Holders



*Illogan Boys' School.*

- 265 Pencil and Colour Drawings
- 266 Cardboard Models
- 267 Plasticine Models

*Lanner Infants' School.*

- 268 Dolls' Clothes
- 269 Dolls' Jumpers

*Camborne National Girls' School.*

- 270 Nature, common objects
- 271 Cloth Covered Cardboard Models
- 272 Nature Study, Flowers

*Trevenson (Pool) Handicraft School.*

- 273 Handicraft (woodwork) representing class work of Boys drawn from Elementary Schools in the Illogan area, Redruth and Camborne District

*Pendarves Road (Camborne) Handicraft School.*

- 274 Handicraft (woodwork) representing Class Work of Boys drawn from the Elementary Schools in the Camborne area. Redruth and Camborne District.

*Bassel Road Girls' School.*

- 275 Drawing (a) Nature, (b) Model
- 276 Needlework
- 277 Knitting
- 278 Plasticine Models
- 279 Handicraft, representing work of the Roskear Boys' Council School Camborne.
- 280 Handicraft, representing work of the Roskear Boys' Council School, Camborne.
- 281 Handicraft, representing work of the Roskear Boys' Council School, Camborne.

*Camborne and Redruth Schools, Domestic Science Centres.*

- 282 COOKERY: Pasties, Pies, Bread, Cake, Meat Dishes, Cheap Dinners. LAUNDRY: Finished Articles, Woollens, White Clothes, Prints, Silk, Lace, Collars, cuffs, Fancy Articles. HOUSEWIFERY: Home-made Polishes, Home-made Cradle, Cupboard, Labour Saving Articles













